DEC. 30 1960

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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1961 WILL BE A GOOD YEAR

Demand at an all-time high, topping 10-million b/d

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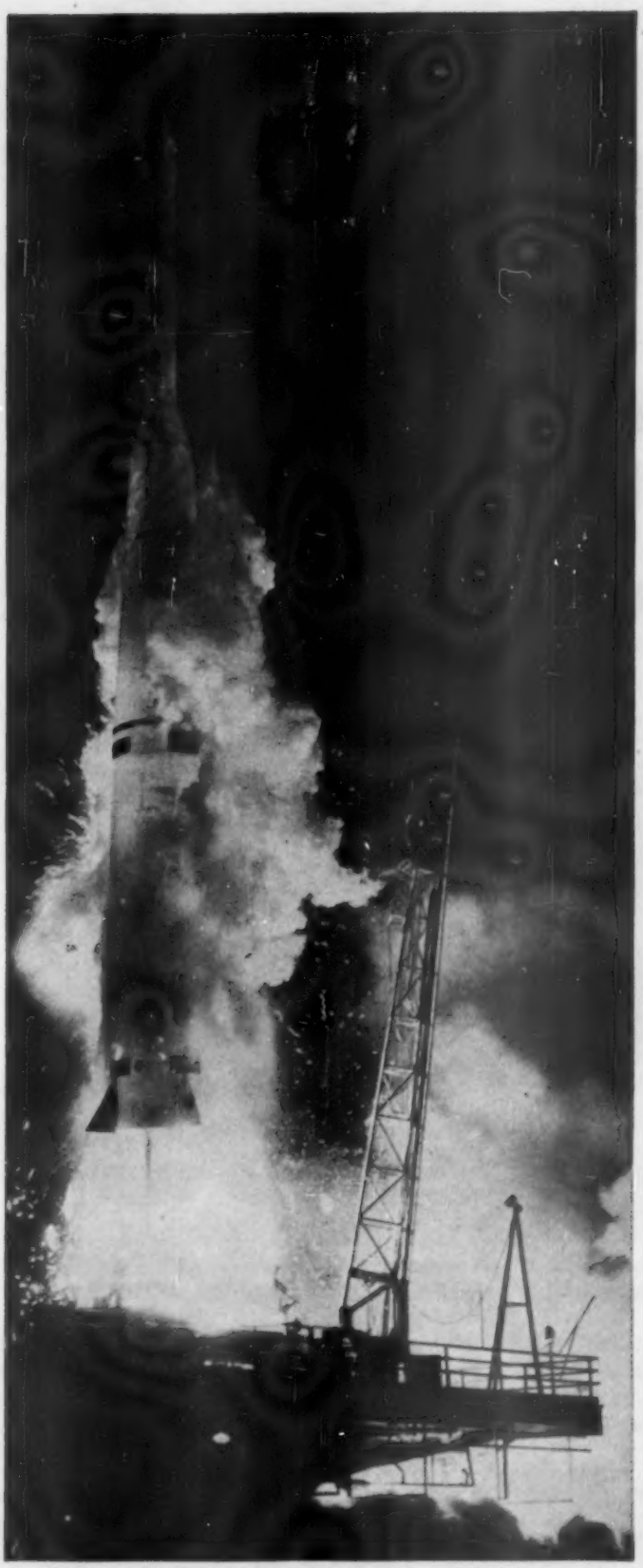

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INSIDE *Slant*

FINE IDEA, BUT TRY IT

Wouldn't it be wonderful if every country could regain its historical position in world or regional oil markets?

It wouldn't be a Middle East or South American country, or even the Soviets, who would gain the most.

The U.S. would reap the most benefits. In fact, there wouldn't be much left for anybody else.

If you have any doubts, take a look back to 1861, when the U.S. produced 99.2% of the world's oil.

But the discovery of oil in other countries, and competition, changed this picture. Yet other countries that have seen their share of the world markets decline still are clamoring for a historical position.

Advocates of the historical plan are to be commended, but the world isn't standing still. Neither are the oil markets.

As late as 1950, the U.S. had 51.9% of the world oil markets, but the figure had dropped to only 36.1% by the end of 1959.

The U.S. producer, watching his market being choked off to make room for others' oil, is amused by the historical position clamor.

LeRoy Menzing
Editor

Congrats and 73s to Robert W. GUTEKUNST, Esso Research and Engineering Company • Post Office Box 8, Linden, New Jersey

Joe Roughneck, backbone of the oil and gas industry, sees many a truck of tough Lone Star pipe roll onto well locations from the bayous of the Gulf Coast to the plains of the Williston basin. He knows delivery will be *on time* because Lone Star pipe is stockpiled . . . in quantity . . . in the heart of the oil country.

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Views That

Dear Sir:

I have just finished reading the article "Standardize to Cut Waterflood Costs" [PW—Dec.16'60,p24] about the program being carried out by our company. I think the article is a fine example of an outstanding local newsman and writer and of good coordination between him and the New York office of your company.

I also think PETROLEUM WEEK is a big asset to the oil industry.

R. S. TRIPPET
President
Home-Stake Production Co.

"The number of employees in the domestic producing industry is down 18,000, or 6%, below the same time last year, and 41,000, or 12%, below 1956."

—ALVIN C. HOPE
President
Independent Petroleum Assn. of America

"It now seems likely that 1960 refinery runs will exceed those of 1959 by about 1%. With demand [increase] of 2%, this commendable exercise of self-restraint has brought about the much-needed reduction in product inventories."

—L. F. MCCOLLUM
President
Continental Oil Co.

"Taxes never die, it seems; they just get bigger and come in different disguises. Out in Los Angeles, there's a new wrinkle, a proposed "foul-air tax" for Los Angeles motorists which would exact a 10-cent-a-gallon levy on gasoline. This would be refundable at a "tax rebate smog-testing station" on a graduated scale according to the degree of air-polluting elements alleged to be released from the car. How's that for ingenuity?"

—OUR SUN
Sun Oil Co.

"It is interesting to note that while the expiration of the temporary 1¢ gasoline tax will take away approximately $550-million annually from the highway trust fund, other taxes [on cars, buses, trucks, spare parts, accessories, and lubes] will add approximately $850-million, or a net increase of about $300-million.

Therefore, if Congress takes no further action whatever, the interstate program will continue to rise until it reaches the record-breaking sum of $2.4-billion by 1964."

—JOHN A. AINLAY
Executive Secretary
American Petroleum Institute

Make News

"We expect our domestic refinery runs for 1960 to be about 3.5% higher than last year in spite of recent cutbacks amounting to between 75,000 b/d and 90,000 b/d. These cutbacks have been made in order to control inventories of both crude and products, which we maintain under constant and careful supervision."

—Augustus C. Long
Chairman
Texaco Inc.

"Contained in the platform of the incoming [Democratic] party is this unqualified statement: 'We support the establishment of a national fuels policy.'

"This statement seemed to cause little consternation either before or after the election. The reason for public apathy on this point possibly is that emphasis has been placed on more politically appealing subjects, but probably is that the significance of the statement is not generally understood.

"Unless our two industries [oil and gas] can unite in a spirit of watchful cooperation, these few lines could add another horn to our national energy dilemma."

—E. Clyde McGraw
President
Transcontinental Gas Pipe Line Corp.

"Some progress has been made, but we are still in the position of having to guess, perhaps in an educated way, at the actual cost of finding oil and gas.

"The discussion of a feasible industry-wide cost study can be divided into three sections. First, there is the problem of agreeing upon definitions of the different categories of cost to be investigated. Second, the actual way in which these cost categories would apply to the operations of a single firm carrying out exploration and development activities must be described. Third, difficulties in aggregating data for individual firms into national totals must be clarified."

—John E. Hodges
Director of Planning and Coordination
Hughes Tool Co.

Petroleum Week will publish reader comments each week. Address letters to LeRoy Menzing, Editor, Petroleum Week, 330 W. 42nd St., New York 36, N. Y.

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60-Second Summary / WHAT'S HAPPENING IN OIL

December 30, 1960

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Import allocations east of the Rockies will run only slightly below the previous periods—not the big cut that had been expected. The permissible crude and unfinished oils quota for the first half of 1961 will average 689,896 b/d, down 14,432 b/d from the last half of 1960. . . . p. 29

•

Optimism is the key for 1961. A 2% increase is expected to lift demand to an all-time peak of more than 10-million b/d, and hopes are bright that this could be the industry's most profitable year. . . . p. 13

•

It's beginning to look as though oil men will have to become experts on hides, tobacco, wool, and other nonpetroleum commodities. Russia's swap deals are changing the complexion of the international oil market. . . . p. 58

•

Oil and gas may be found in any type of rock—including basement. That's the belief of a Missouri professor, who has come up with a new theory on how hydrocarbons migrate and accumulate. . . . p. 26

•

Kuwait's government is having second thoughts about the practicability of world crude proration. The feeling is growing that there are more minuses than pluses in the idea. . . . p. 20

•

Use of outside experts to handle right-of-way acquisition work is taking on trend proportions in the pipeline industry. It's a move to cut overhead in the present slack construction period. . . . p. 48

•

Another big oil company is realigning its domestic operations. Cities Service Co. began consolidating its U.S. operations into one company, Cities Service Oil Co., immediately after exemption from its 20-year status as a public utility. . . . p. 19

•

European oil men are talking about steps that can be taken if Middle East producing countries actually initiate a proration program. Two results are indicated: A spurt in exploration outside the Middle East, and a shift to other energy sources. . . . p. 50

•

Confidence in their effectiveness is spurring greater use of radioisotopes by refiners and petrochemical firms. Special training programs are placing emphasis on safety. . . . p. 41

•

Aluminum is now being applied to two more areas in the oil industry. It's being used for offshore well guards and templates and for vacuum tank trucks hauling mud. . . . p. 31

Up to the Minute / SIGNIFICANT LATE NEWS

December 30, 1960

The industry is eyeing wages, prices, and inventories this week. Wages have already been increased by 50% for salaried employees in many companies. Some independent unions and Oil, Chemical & Atomic Workers locals have accepted increases of 14¢ an hour, or 5% in some cases, and it now appears certain that others will follow suit.

With wages moving up, the industry has served notice that prices must take a similar turn, but when and where was the outstanding question at mid-week. Gulf Coast heating oil prices, which moved up 0.25¢ a gal. earlier in December, appear set for another move, governed more by demand and inventories than by the wage hikes. The other distillates have advanced elsewhere. But beyond the distillates, most industry observers are wary over possible price increases. Competitive fuels impose a direct ceiling over residual fuel quotations, and surplus stocks impose limitations over gasoline prices.

•

The Kennedy Administration has singled out regulatory agencies as one of its first targets. That was made clear with the publication of the recommendations for changes in federal agencies by James M. Landis, which suggested to the President-elect that:

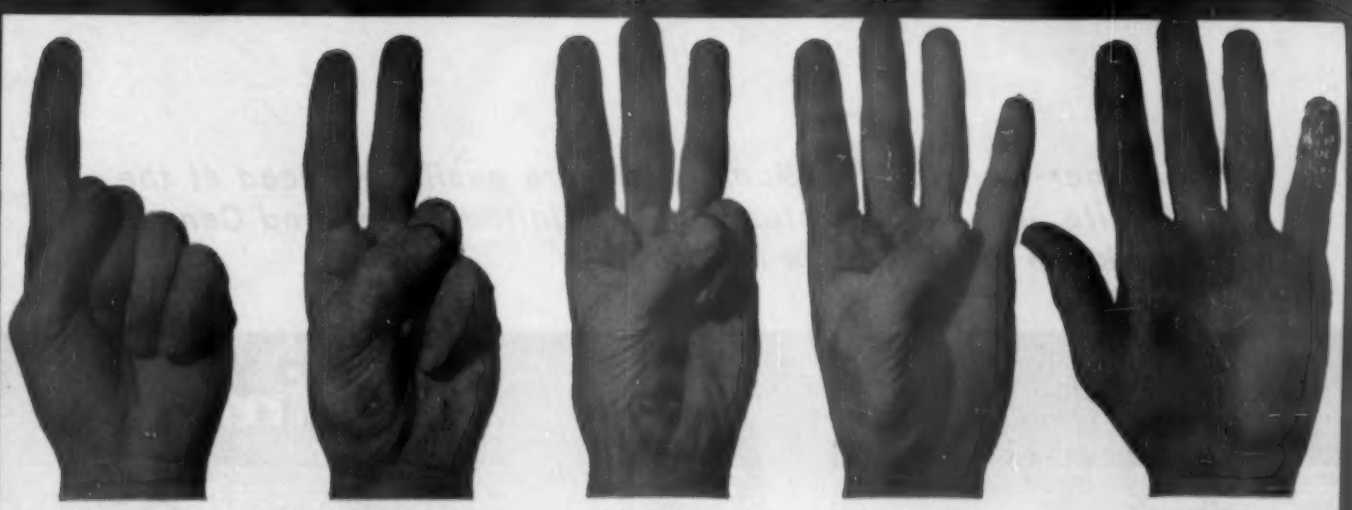
- **A super-agency be created to coordinate the policies and procedures of all present federal agencies** in the communications, transportation, and power fields, an agency which Landis apparently will head;
- **An office be formed to coordinate the "utilization and conservation" of various forms of energy** and to emphasize the development of other sources of energy, such as hydrogenation of coal;
- **The Federal Power Commission be increased to seven members** "to permit it to sit in two panels of three, with final decision in each panel, so as to help it clear up its enormous backlog."

There is little doubt that FPC will come under the sharpest scrutiny by the incoming Administration. The Landis study reported that FPC "without question represents the outstanding example in the federal government of the breakdown of the administrative process." It charged that "these defects stem from attitudes plainly evident on the record of the unwillingness of the commission to assume its responsibilities under the Natural Gas Act, and its attitude substantially contemptuous of refusing in substance to obey the mandates of the Supreme Court of the U.S. and other courts."

The Kennedy Administration may also take a close look at FPC's area pricing policy. The Landis report commented: "The area prices set forth substantially reject the rate base approach, and the fixed area prices come close to approximately current maximum prices."

•

The Federal Power Commission apparently is set to switch to geological area pricing for gas in at least one region. It will hold hearings starting Mar. 6 in Midland, Tex., to determine the area price ceilings for the entire Permian Basin of Texas and New Mexico. A single area price would eliminate the disparity of several prices now established, based on Railroad Commission districts in the Texas portion.



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BETTER (lower) barite requirements when substituted for oil in muds.

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Bit Lube and Emulsion (3 week average)	52	120.38	122.43	8.25	251.06

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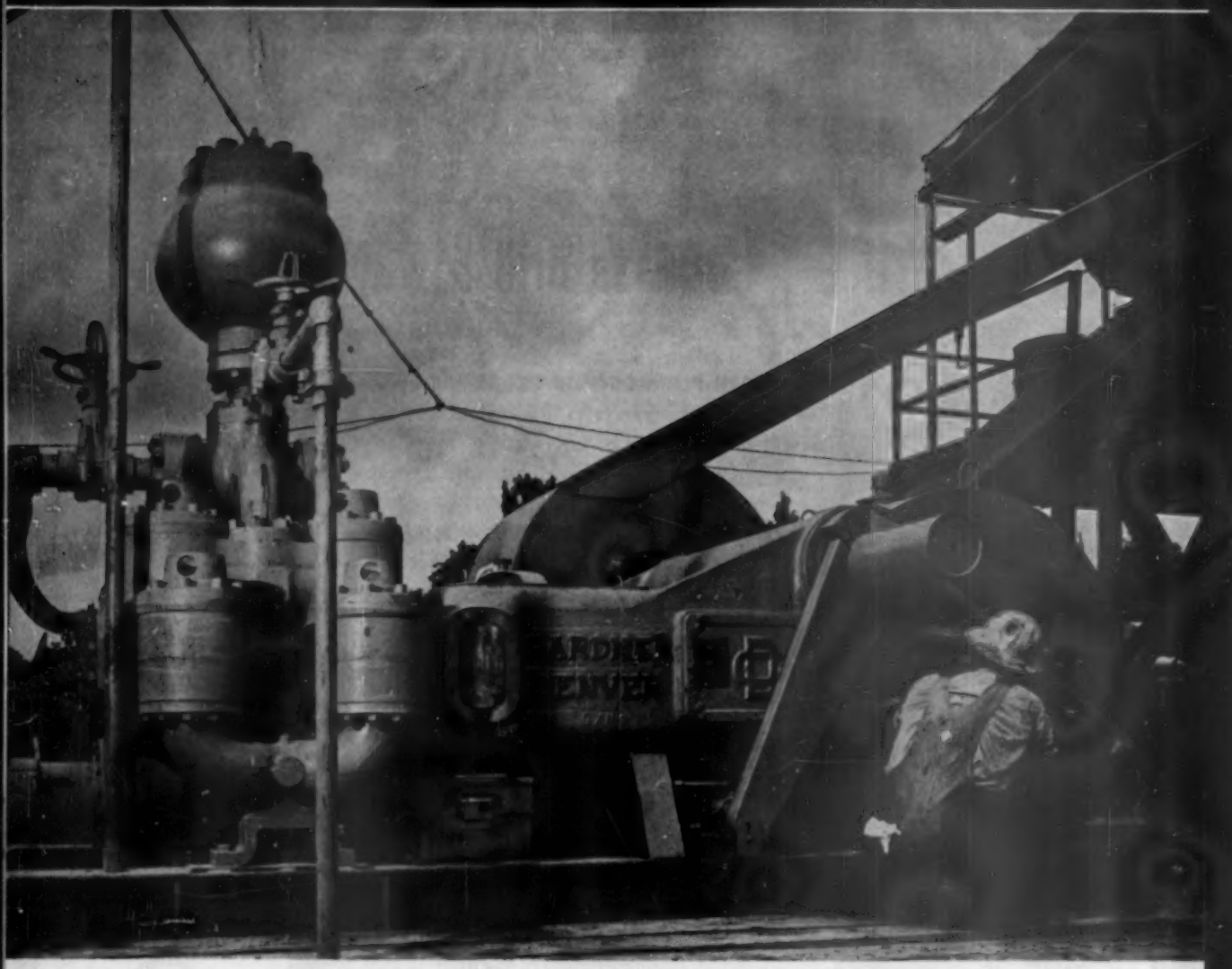
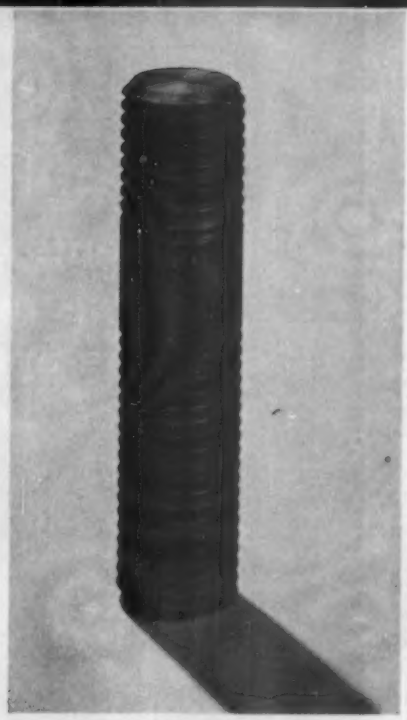


This GXN is one of two Gardner-Denver mud pumps in tandem arrangement on a wildcat in Louisiana. Gardner-Denver engineers designed these pumps for complete service in the field. And Gardner-Denver mud pump parts are as near as your J&L Supply store. Unitized, trailer-mounted, offshore—any rig with Gardner-Denver mud pumps is never handicapped for lack of experienced Gardner-Denver service or genuine Gardner-Denver parts.

Mud Pump Maintenance



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Ask your J&L Supply man for literature on Gardner-Denver mud pumps in sizes to 1250 h.p. for drilling to any depths.

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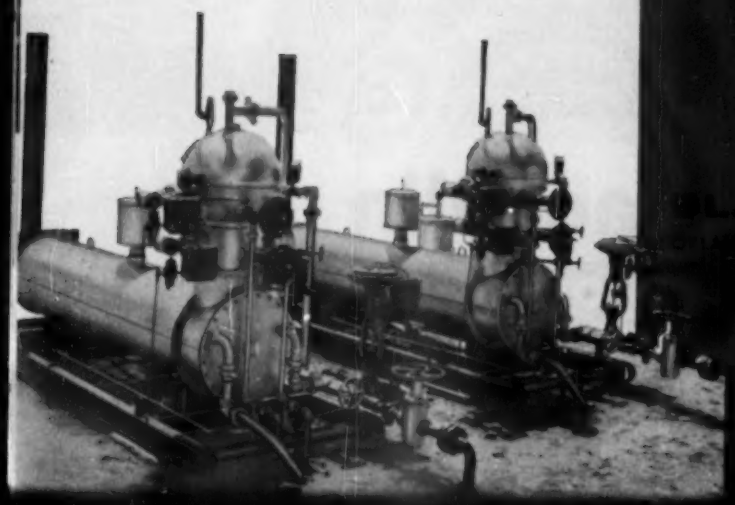
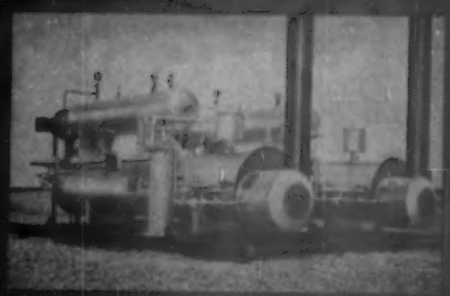
FREE-O-FREEZ combines a spherical or horizontal separator and an indirect heater in one *automatic, compact, skid-mounted* unit. These units control bottom liquid temperature. BS&B's new Flash Arrestor gives maximum burner safety and eliminates possibility of flash-back. Variations of flow recorded on the gas chart are kept to a minimum by setting oil dump controls on throttling and water dump controls on snap. Snap acting water dump helps prevent freezing.

These spherical separator heater units each process 2 to 4 MMSCFD of gas with 18 bbls. of oil and 2 bbls. of water per MM. They have seen two hard winters. There were no freeze-ups. Displacement element for water dump is hung vertically, completely immersed in the liquid section, making for easier control of interface of oil and water. Submerged liquid section has sufficient area to warm the liquid in it, but there is little heat transferrence to upper gas section. Lower liquid is kept warm independent of sales gas temperature. Wellstream is preheated in the heater flow coil before choking to prevent hydrate formation in the separator.



Prevents equipment freeze-ups, shut-downs and service calls



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KANSAS CITY

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Better Earnings May Set '61 Pace

- **A 2% gain in demand plus improved product prices could result in the best year for petroleum.**
- **Higher budgets will spark drilling in many areas, with indications of 46,000-plus new completions.**

Oil men are betting on better business in 1961, despite a downturn in the cards for the general economy during the first half of the year.

Finding the right word for the state of the nation's health has become a parlor game among business economists.

But whether it's tagged "recession," "contraction," "adjustment," or "creeping stagnation," the consensus is that the economy will dip slightly, bottoming out about midyear.

Nevertheless, a surprisingly large number of the 173 manufacturing companies participating in the National Industrial Conference Board's latest survey of business expectations predict their profits, new orders, and billings in the first half of 1961 will be higher than in the like period of 1960.

A majority of the oil companies surveyed look for better earnings.

There's a new wave of optimism spreading—and this optimism in itself could be a shot in the arm for the oil industry.

A typical comment comes from Augustus C. Long, chairman of Texaco Inc.: "At the close of 1960, the industry is in better shape, both as to total inventories and as to prices.

"Because of this fact, and because our business is more resistant to downturns in the economy, we feel that we will enter the New Year with better prospects than a year ago."

M. J. Rathbone, president of Standard Oil Co. (N.J.), which had a record high sales volume for 1960, predicts that the U.S. can expect an "average annual rate of demand growth of about 2.5% over the next few years, although it is possible that the gain in 1961 could be somewhat lower."

John E. Swearingen, president of Standard Oil Co. (Ind.), notes: "If product prices continue near recent levels, over-all prices in the first half of 1961 should average 3% to 4% higher than in the corresponding period of 1960."

Some compelling national factors are the basis for the optimism in 1961 forecasting: a higher gross national product, and more money where it counts most—in consumers' pockets.

McGraw-Hill economists predict that gross national product, the only ready measure of the over-all performance of the economy, will rise moderately, from a $503.5-billion annual rate at the end of 1960 to $505.8-billion by midyear—and that it will advance at a brisker rate to $512.5-billion by the close of 1961.

Also on the plus side of the ledger are housing starts and automobile sales, which directly affect the gasoline and heating oil markets—oil's largest money-makers.

McGraw-Hill estimates are for 1,350,000 starts in 1961, reversing a trend that had been declining for over a year. In 1960 there were 1,300,000 housing starts compared with 1,325,000 in 1959.

Some automobile executives expect 1961 to be another banner year, with sales coming close to the 1960 mark of 6.6-million units—which was the second-best year for the industry, not far short of the record set in 1955, when 7.2-million new cars were sold.

What negative factors there are in the economy are not necessarily cause for pessimism, assures one oil analyst.

The Federal Reserve Board's index of industrial production—second only to GNP as a business barometer—is expected to slump from an average of 108 in 1960 (1957=100) to 101 by midyear. It will then move up gradually to 104 by the year's end.

But C. V. Horky, Pure Oil Co., points out: "The negative elements in our current economic outlook . . . because they can change overnight . . . are too flimsy to include as solid bases for projecting a view of 1961."

Carefully weighing the pluses and minuses in the economy, most petroleum economists agree that total demand will rise 2%, topping 10-

'61 a High Cycle?

Next year should see a marked improvement in exploration activity over the 1958-1960 level.

"Historically," reasons the chief geophysicist of a major oil company, "peak periods for oil exploration and subsequent oil discoveries have followed cycles of ten years, with outstanding discovery years usually following intensive exploration periods by a time lag of six to eight years."

Oil exploration reached a low during the late 50's. But its recovery, which might normally have been expected during 1960, was delayed by unfavorable economic influences.

This delayed buildup, the geophysicist believes, should begin to manifest itself in 1961, probably reaching a peak in late 1962.

More Multiple Wells

Multiple completions—a proved cost-cutting device—are on the increase.

One company that has multiply completed nearly 400 wells in the past two years expects to expand its program next year.

Multiples can be expected primarily in West Texas, the Gulf Coast area, and offshore.

Equipment has improved markedly in the past few years, and regulatory bodies have come to accept multiples as standard practice. Producers have recognized them as an effective way of reducing development costs.

But, says one major company's chief engineer, "The number of producing strings run in a single hole has about reached its ultimate."

Total demand in 1961 will score a gain of 2% to top 10-million b/d for the first time in history—that's the prediction of eight leading oil economists.

	First Half	Second Half	Full Year	% Change from '60
	(Thousands of B/D)			
Total Demand (Inc. Exports)	10,250	10,010	10,130	+2.8
Gasoline	4,190	4,380	4,285	+2.6
Distillates (Inc. Kerosine and Commercial Jet)	2,502	2,172	2,337	+3.4
Residual	1,695	1,440	1,570	+1.3
All Other	1,868	2,018	1,948	+4.4
New Supply	10,190	10,110	10,150	+4.0
Refinery Runs	8,725	8,325	8,275	+2.5

	First Half	Second Half	Full Year	% Change from '60
	(Thousands of B/D)			
Total Demand (Inc. Exports)	10,264	9,947	10,104	+2.5
Gasoline	4,197	4,315	4,256	+1.9
Distillates (Inc. Kerosine and Commercial Jet)	2,509	2,195	2,351	+4.0
Residual	1,712	1,447	1,578	+1.8
All Other	1,846	1,990	1,919	+2.9
New Supply	10,165	10,045	10,104	+3.5
Refinery Runs	8,234	8,284	8,259	+2.3

	First Half	Second Half	Full Year	% Change from '60
	(Thousands of B/D)			
Total Demand (Inc. Exports)	10,178	10,017	10,098	+2.5
Gasoline	4,166	4,369	4,268	+2.1
Distillates (Inc. Kerosine and Commercial Jet)	2,497	2,171	2,334	+3.3
Residual	1,674	1,458	1,566	+1.0
All Other	1,842	2,019	1,930	+3.5
New Supply	10,032	10,060	10,049	+3.0
Refinery Runs	8,147	8,279	8,215	+1.8

	First Half	Second Half	Full Year	% Change from '60
	(Thousands of B/D)			
Total Demand (Inc. Exports)	10,168	9,923	10,045	+1.9
Gasoline	4,180	4,337	4,259	+1.9
Distillates (Inc. Kerosine and Commercial Jet)	2,487	2,160	2,322	+2.7
Residual	1,673	1,458	1,561	+0.7
All Other	1,828	1,976	1,903	+2.0
New Supply	10,019	10,021	10,022	+2.7
Refinery Runs	8,131	8,246	8,188	+1.5

	First Half	Second Half	Full Year	% Change from '60
	(Thousands of B/D)			
Total Demand (Inc. Exports)	9,956	9,946	9,950	+1.0
Gasoline	4,113	4,313	4,215	+0.9
Distillates (Inc. Kerosine and Commercial Jet)	2,489	2,224	2,354	+4.2
Residual	1,553	1,417	1,484	−4.2
All Other	1,801	1,992	1,897	+1.7
New Supply	9,900	10,115	10,010	+2.6
Refinery Runs	8,099	8,432	8,268	+2.5

million b/d in 1961—a new high (tables, right).

Total demand is expected to average 10,053,000 b/d against a now-indicated 1960 demand of 9,880,000 b/d. Demand will average slightly higher in the first half than in the second half of the year—a move counter to the general economy, but normal for oil.

This "average" of the estimates of eight leading economists agrees closely with the forecast of the Bureau of Mines (page 16).

The estimates of the individual economists are based on normal weather conditions and a continuation of tight import restrictions.

"Although the expected increases in demand for 1961 are small," says Maynard I. Landa, vice-president of Cities Service Petroleum, Inc., "they represent gains that could result in the oil industry's most profitable year."

The key to success, he emphasizes, "will be businesslike planning and scheduling of production and refinery operations, so that inventories of all products and crude are maintained at reasonable levels throughout the year."

Major products will add little to the percentage increase in demand. The impetus will come from the "all other" category, where demand is expected to grow at twice the rate of total demand.

Predictions are that gasoline and distillate demand will inch higher by 1.8% and 2.3% respectively.

A major cause of weakness is the influence of the compact car on gasoline, and of the additional supplies of natural gas on the fuel oil market.

But at least one major marketer sees a sunnier future: "More and more companies are going to the 35-hour week," he says. "There are more and more two- and three-car families, and the various resort areas are doing more advertising. Compact cars may hurt our business some [they will account for some 35% of U.S. production in 1961], but this is generally offset by the increasing number of cars on the road."

To dispel fears for the burning-oil market, he notes, "Home heating oil and LPG will, as they have in the past, compete with gas for the markets, but will hold their own.

"This will result from efforts to market more effectively, and through research that will provide more effective methods of using these burner oils."

Total supply needed to meet demand is estimated at 10,047,000 b/d by leading economists, an increase of nearly 290,000 b/d over 1960.

Domestic production of crude and gas liquids in 1961 is placed at 8,211,000 b/d, of which 7,240,000 b/d will be crude.

The Bureau of Mines, however, which expects total demand to average 10,054,000 b/d for 1961, predicts a required new supply of 9,983,000 b/d, 64,000 b/d less than the average of the eight economists. Domestic crude production for 1961 is estimated by the bureau at 7,210,000 b/d.

Drilling activity is expected to be on a par with 1960, or slightly higher.

Such an estimate would compare with the more than 46,000 completions in 1960, 50,924 in 1959, and 49,142 in 1958.

	First Half	Second Half	Full Year	% Change from '60
	(Thousands of B/D)			
Total Demand (Inc. Exports)	10,201	10,026	10,113	+2.6
Gasoline	4,193	4,375	4,285	+2.6
Distillates (Inc. Kerosine and Commercial Jet)	2,525	2,197	2,360	+4.4
Residual	1,640	1,482	1,560	+0.6
All Other	1,843	1,972	1,908	+2.3
New Supply	10,152	10,075	10,113	+3.6
Refinery Runs	8,236	8,352	8,294	+2.8

	First Half	Second Half	Full Year	% Change from '60
	(Thousands of B/D)			
Total Demand (Inc. Exports)	10,145	9,955	10,050	+2.0
Gasoline	4,140	4,320	4,230	+1.2
Distillates (Inc. Kerosine and Commercial Jet)	2,495	2,215	2,355	+4.2
Residual	1,635	1,385	1,510	−2.6
All Other	1,860	2,020	1,940	+4.0
New Supply	9,961	10,088	10,025	+2.7
Refinery Runs	8,150	8,350	8,250	+2.2

	First Half	Second Half	Full Year	% Change from '60
	(Thousands of B/D)			
Total Demand (Inc. Exports)	9,990	9,890	9,937	+0.9
Gasoline	4,100	4,325	4,214	+0.9
Distillates (Inc. Kerosine and Commercial Jet)	2,388	2,100	2,241	−0.8
Residual	1,625	1,425	1,523	−1.7
All Other	1,877	2,040	1,959	+5.0
New Supply	9,943	9,865	9,903	+1.5
Refinery Runs	8,050	8,075	8,062	−0.1

The trend toward deeper drilling will continue, but fewer superdeep wells—20,000 ft. and below—are being planned. This will keep total footage down to 1960 levels of about 195-million ft.

One major producer explains it this way: "We, along with the rest of the industry, have stopped drilling the superdeep holes. The main reason why we aren't going to drill the very deep tests is that it isn't economical. We don't get a proper rate of return on our investment."

Not all areas will have increased drilling activity in 1961, but no severe slumps are expected anywhere, either.

Here are spot comments from operators and contractors around the country:

- Rocky Mountains: "We have money available. We will drill anything that looks at all worthwhile. We expect activity to increase."
- Texas: "We feel that we can afford to be a little optimistic, and have set our development program on the expectation of a producing-day schedule in 1961 about equal to the 104 days permitted in 1960."
- California: "It looks as though drilling will pick up. The oil picture has changed a bit, with the recent increase in the price of low-gravity oil, and the fact that oil can be sold now, with most of it going at posted prices. There is some incentive again to look for and produce crude in California."

One of the brightest spots for drilling continues to be offshore—thanks largely to the recent federal lease sales.

Off Louisiana, some 50 tracts of 5,000 acres or less brought more than $1-million each. Off Texas, which has not proved particularly prolific, seven tracts, each containing 5,750 acres, brought more than $1-million each.

Says one producer: "With 800,000 acres to evaluate, and either secure production on or abandon by the end of the lease term, you can bet that the operators are going to keep up a snappy pace offshore."

In production operations, next year will bring a continued drive to cut costs. But emphasis will shift from an attitude of "make do" or "do without" to one of improvement of existing techniques.

New methods of oil recovery, and the use of computers in research, are the developments to watch.

"We've all been playing with the idea of injecting steam for recovery of oil, fire-flooding, miscible recovery," says a research man for a major.

"The big thing we're trying to figure out is how to get oil out of tight formations. For instance, steam and in-situ work on the oil itself to make it less viscous.

"We know fracturing helps get oil out of tight formations. Next year, among other things, we'll be seeking better ways to place these fractures and to control the size of them."

As far as computers are concerned, he comments, researchers are going to need much bigger ones than they have now.

"If we had a large enough computer, we could predict everything that goes on in an underground reservoir. We'd even be able to tell what pressures are in effect at various points in a reservoir."

For refining, little capacity increase is planned. But large sums will be spent to upgrade products, to develop new products, to increase yields, and to operate more efficiently.

Comments Union Oil Co. of California: "We are looking at our entire processing scheme. We will take an objective attitude, perhaps ignoring our present facilities and methods, and suggest optimum refining procedure which could be the basis for a long-range plan.

"Ultimately, this may lead to simplification of processing. During the study, we will certainly consider obsolete units and those that have high maintenance costs—plants not keyed to today's yields and costs."

Industry-wide, refiners will step up their spending to:

- Modify existing equipment, and add equipment when it is needed, to process cheaper crudes with high sulfur content.
- Install new types of prime movers to save on fuel. The waste-heat, or carbon monoxide, boiler will be very popular in 1961.
- Replace outmoded units. Wherever possible, several will be consolidated into one larger plant.
- Consolidate plants in certain parts of the country. This will lead particularly to larger and better automatic blending and compounding plants for lubricants.
- Improve catalysts. The refining branch of the industry has much at stake in its catalytic processes. A small saving resulting from improved catalysts can mean a lot.

There will be a greater use of hydrogen for processing in 1961. "What the oil business needs," says Wayne A. Howard, manager of coordination and control of Mobil Oil Co.'s manufacturing department, "is a real cheap method for making hydrogen."

Computers will be used more and more in refineries and processing plants. The ultimate goal: over-all computer control. But this won't happen in 1961.

Says a company official: "There is no longer any argument that computer control is coming—the only argument is the speed at which it is going to get here."

And a refining executive adds: "We continuously study the idea of using computers in our refineries. At the present time, we have no closed-loop operations, but we are thinking in that direction.

"We are looking at the use of computers to control units, and then set up the type of control system needed. The units that are easiest to control

with computers are crude distillation and gasoline blending units."

The switch is that management is pushing hardest for computer-controlled operations.

Consulting engineers told PETROLEUM WEEK that, contrary to what happened initially, it is now management that seems to be more sold on computers than the engineers.

Previously, it was difficult to convince management to devote enough manpower to work on computer development.

In transportation, the Federal Power Commission's area-pricing edict should spark the expansion of interstate gas transmission lines, once the intricacies are worked ou

"There remains a tremendous demand for natural gas in the eastern areas, which present lines are unable to fill," says the general manager of a transmission company. "As long as this demand exists, there will be a continuing effort to meet it."

In terms of new project starts, one pipeline executive looks for a ratio of about 5-to-1 for gas lines over liquid lines.

Construction of crude and products lines will be up over 1960, also.

Projects planned so far indicate that approximately 1,000 mi. of crude lines will be built (including gathering lines), costing an estimated $34-million. Predictions are that 3,000 mi. of product lines, costing nearly $190-million, will be added.

Beyond 1961, no exciting expansions into new territories are in the offing. Steady growth is the pattern for the '60s.

A vice-president of a gas transmission company comments: "In the future, I see more exploitation of markets rather than penetrations into new marketing areas. I think that, over the next couple of years, both natural gas and products lines will pick up business-wise."

Another official agrees: "The future does look bright, especially when you consider the ever-rising population, more automobiles, and the fact that petroleum is still our primary source of energy." However, he adds, it may take three to five years to see a pickup in the pipeline part of the industry.

One dilemma soon to face the pipepline branch is in the proposed construction of several helium extraction plants.

"These plants eventually will make available large quantities of natural gas and gas liquids," says one pipeline executive, "transportation facilities for which do not currently exist in most instances.

"I've discussed the problem with several of my acquaintances in the industry, but as yet none of us has come up with a solution.

"Eventually, it would seem to me, some pipelines are going to have to be constructed."

Marketers will be spending more money to woo "King Customer" next year. For the most part, increased budgets will be spent on construction of new service stations, and a smaller amount on modernization.

One major marketer notes: "We expect a substantial increase for 1961, and then expect the budget to remain fairly constant for the next couple of years."

One factor that marketers will begin to face up to in 1961 is the service-free trend in new auto designs.

Greaseless fittings and a host of other new improvements are beginning to haunt service-station designers, who are wondering about the future need for lubrication bays.

Symptomatic of what many marketers will be doing next year is Mobil Oil Co.'s creation of a special new department to study ways to improve station design.

The service-free trend in automobiles is one factor that this new unit will have to consider.

Marketers will be looking longer and harder than ever for a program to cut the number and length of price wars.

A major marketer in the Southwest says: "We are studying new pricing plans. We haven't formulated any yet, but are fairly sure that some new system is needed.

"In one city in 1959, we had subnormal prices at our stations 15% of the time over a ten-month period. In 1960, for the same ten-month period, we had subnormal prices for 23% of the time. Also, we find that in 1959 the average temporary competitive price allowance was 3.43¢ per gal. In 1960 it had risen to 3.89¢ per gal.

Margins—always at the root of any dealer-supplier ill feeling—will come in for closer scrutiny next year, too.

Mobil and Esso have paved the way for an orderly retreat from local dealer allowances, which more or less guarantee minimum margins to dealers.

Wide-area price patterns—through which local allowances are eliminated—are important, not only because they tend to stifle local price wars, but because of the obvious governmental objection to local price discounts, even when they are intended to meet private-brand competition.

Bureau of Mines Forecast:

1961 Demand Will Be Up 1.7%

(Thousands of B/D)

	1st Quar.	2nd Quar.	3rd Quar.	4th Quar.	Full Year	Pct. chge. from 1960
U.S. output	**8,220**	**8,035**	**8,135**	**8,315**	**8,177**	**+2.8%**
Crude	7,240	7,095	7,191	7,312	7,210	+2.7
Gas liquids	980	940	944	1,003	967	+3.9
Imports	**1,920**	**1,745**	**1,700**	**1,860**	**1,806**	**—0.6**
Crude	1,020	1,000	1,030	1,060	1,023	—0.5
Products	900	745	670	800	783	—0.6
New Supply	**10,140**	**9,780**	**9,835**	**10,175**	**9,933**	**+2.2**
Total demand	**10,825**	**9,435**	**9,415**	**10,550**	**10,054**	**+1.7**
Gasoline	3,835	4,505	4,530	4,200	4,270	+2.1
Kerosine	512	267	312	499	398	+9.0
Distillate	2,760	1,440	1,290	2,260	1,934	+1.4
Residual	1,905	1,375	1,275	1,655	1,551	—1.8
All Other	1,813	1,848	2,008	1,936	1,901	+2.5
Dom. demand	**10,635**	**9,235**	**9,215**	**10,360**	**9,859**	**+1.8**
Gasoline	3,800	4,460	4,490	4,165	4,231	+2.1
Kerosine	510	265	310	495	395	+8.8
Distillate	2,730	1,410	1,260	2,230	1,904	+1.4
Residual	1,860	1,325	1,225	1,600	1,501	—1.8
All other	1,735	1,775	1,930	1,870	1,828	+3.0
Crude runs	**8,224**	**8,050**	**8,186**	**8,357**	**8,204**	**+1.5**

'Consumer' Gas Bill To Be Proposed

The National Assn. of Railroads & Utilities Commissioners has adopted such a proposal, which would keep producers under strict controls. It will be one of the draft bills recommended to the new Congress in January.

More than one proposal to amend the Natural Gas Act will be submitted to Congress in 1961.

There have been indications all along that a task group representing producers, transmission firms, and distributors would offer some form of recommended legislation to the new Congress.

The primary purpose of such proposed legislation would be to remove producers of gas from utility-type regulation—assuming that the task group, which has had several meetings since late summer, can reach an agreement on the remedial steps that should be taken.

The decision of the Federal Power Commission to turn to area price guides in determining prices to be paid producers, it is understood, has not changed the basic contention of a majority of the task group that some remedial legislation is needed.

Also, some producer groups are continuing to discuss the possibility of submitting a draft bill on their own in the event that a satisfactory proposal doesn't come out of the task group's legislative drafting efforts.

The latest proposal comes from the National Assn. of Railroads & Utilities Commissioners. It has adopted a set of amendments designed to keep producers under a strict regulatory thumb.

The group has had a special committee at work during most of 1960 studying natural gas rate problems.

A subcommittee of that group, headed by Everett C. McKeage, president of the California Public Utilities Commission, drafted proposed amendments to the Natural Gas Act which were adopted at the recent convention of the association in Las Vegas.

The proposals of the association amount to a consumer gas bill.

The approved measure proposes to amend three sections of the Natural Gas Act to:

- Outlaw all forms of "indefinite" pricing clauses;
- Permit FPC to suspend rate increases for sales of natural gas to industrial users;
- Prohibit applications for rate increases until FPC has passed on the "reasonableness" of all rate filings by a particular company;
- Permit FPC to make retroactive findings that producer prices once approved are "unreasonable."

The proposals offered by the utilities commissioners' group do not have the full support of all members who served on its gas study committee.

Representatives of 19 states opposed adoption of the measure.

The representative to the association from one oil and gas producing state challenged the proposals on the ground that some of the provisions are unfair and unreasonable.

He said that gas producers are entitled to "fair and equal treatment" clauses in any such legislation.

Some mechanics must be provided, he argued, for adjusting prices of a commodity that the seller must commit himself to deliver continuously for a long term.

Prohibition of such fair-treatment clauses would "likely deny the out-of-state consumer access to the gas which he will require in the future," the official from the producing state charged.

There are some indications that the utilities commissioners' group is intent on declaring gas producers to be public utilities.

There is nothing in the proposed amendments to compensate for the inherent risk factors involved in developing natural gas, one member of the association declared.

It was suggested to the utilities commissioners' group that natural gas producers should get the same treatment from FPC as do coal producers who sell fuel to electric power plants.

"The coal mines," it also was pointed out, "are not declared to be utilities and so regulated, but the sale price of electric power remains subject to utility regulation, the interest of the consumers is protected, rate decisions are made with dispatch, and the electric industry is able to expand to meet increasing consumer needs.

"It would seem that the same principles apply to natural gas."

In addition to the proposals to amend the basic gas legislation, some consideration already is being given in Congress to changing regulatory procedures of the Federal Power Commission.

The staff report to a House Commerce subcommittee, chairmanned by Rep. Oren Harris (D., Ark.), who also heads the parent House committee, suggested last week that regulation of the entire industry be tightened.

The most significant recommendations are that the five-month suspension period for rate increases be extended to 18 months, and that an amendment be made to the Natural Gas Act prohibiting rate increases from becoming effective before pending rate proceedings are determined.

The latter recommendation is similar to one of the proposals of the National Assn. of Railroads & Utilities Commissioners.

The staff also noted, in reference to FPC's area pricing plan, that "there is a strong possibility that a court will find that area price fixing is an attempt to evade compliance with the City of Detroit decision." The latter requires the commission to use cost as a starting point in producer rate regulation.

The report added: "If a court so finds, the commission and the gas-producing industry will be faced with more backlog and confusion."

Long Island Pipeline Is Proposed Again

Another plan is afoot to build a products pipeline from the Linden (N.J.) area across the Narrows of New York Harbor to airports and terminals on Long Island.

The latest proposal is planned by Carl M. Loeb, Rhoades, a New York investment firm. The company is talking of a $30-million, 100-mi. line for light products.

This proposal is the third that has been considered (PW—Feb. 13'59,p15). Another has been proposed by a non-oil-company group, and one is still under consideration by some oil companies.

A vital part of any of these proposals would be to acquire rights to use an existing 24-in. line under the Narrows.

Oversupply Promotes Sales of Reserves

- **With payouts on producing getting longer, producers are finding it to their advantage to sell out.**
- **Buyers have the advantage of picking up oil in the ground for long-term market requirements.**

A continued period of oversupply, coupled with certain tax benefits, is convincing many oil producers that the time is ripe to sell their reserves and take a capital gain.

In the past year there has been a rash of sales of producing properties. In October alone, at least a dozen sales were made. One of the largest was sale of Anderson-Prichard Oil Corp.'s producing properties last fall to Union Texas Natural Gas Corp. and the Frankfort division of Joseph E. Seagram & Sons (PW—Sept. 26'60,p15).

An even larger one could be the sale of assets of Honolulu Oil Corp. This company, with production of approximately 43,000 b/d and reserves an estimated ten times that, has been investigating the possibility of selling its properties. The company is now studying offers received from "a number of companies." The only identified bidder is Union Oil Co. of California.

What makes sales particularly attractive today to the seller is that he can get a guaranteed payment for his reserves at a time when he finds it difficult to move his oil.

In some cases, even "old age" is entering into decisions to sell. Some owners would rather retire than sit out what could be a long oversupply period.

In addition, there's a waiting market: Many integrated companies are putting increased emphasis on the hunt for purchasable oil production.

Many of them, with exploration and drilling costs continuing to rise, support the contention that it's cheaper to buy crude reserves than to find and produce them. These companies feel that buying out producers is a good way to supplement their reserves—although they emphasize that they're not cutting back exploration.

Sales of assets of nonintegrated producers come up periodically.

There was a similar rash of sales in 1955 and early 1956. At that time, Atlantic Refining bought Houston Oil Co.'s 17,000 b/d production and large reserves. Among other deals at that time, Sinclair Oil Corp. bought American Republics Corp., and Southern Production Co., and Continental Oil Co. purchased Kirby Petroleum Co.

Key to the willingness of many producers to sell is the ABC method of financing.

Put simply, this is how it works: A, the owner of a producing property who wants to realize a capital gain, sells the property to B for a small amount of cash, and reserves an oil payment for the rest, plus interest, payable out of the gross production of the property. A then sells this oil payment to C, and C obtains the money by pledging the oil payment to a bank. (C hopes to make a profit by obtaining a lower interest rate at the bank than the one paid on the oil payment. He can also take cost depletion on the oil payment, so there is no income tax except on the interest differential.)

By following this procedure, A can realize capital gains treatment on the entire proceeds from the sale of his reserves.

The method also provides advantages for buyers—particularly if they're not in a hurry to realize a profit.

Under the transaction, B acquires the property subject to the oil payment. During the time it takes for the payment to pay out, he gets little of the income from the property, just enough to cover his expenses to operate the property.

The proceeds from that portion of the production used for the oil payment is not taxable to the operator, either. Thus, he pays little income tax during the life of the oil payment since it is designed to minimize his net taxable income after expenses.

In addition, the oil payment makes it possible for him to buy the property with only a small outlay of cash, and without incurring liability for the balance of the purchase price, which is provided by the oil payment.

What it boils down to is this: The joint purchasers will have to pay no income tax of consequence during the life of the oil payment. This, in turn, enables them to offer a larger amount at the outset. And after the oil payment is completed, they own the reserves and all production from them.

"If you don't mind waiting 15 years to get your money back," says one major official, "it works out pretty well. You don't mind paying in oil with today's oversupply problems. And you'll have reserves in 15 years when market conditions should be better."

Humble Oil & Refining Co.'s acquisition of Monterey Oil Co. went the ABC payment route.

The purchaser, Humble, put up $34.4-million in cash plus an oil payment of $72-million spread out over several years.

A group of investors, headed by Chase Manhattan Bank, purchased the oil payment through three newly created firms.

NEXT WEEK

Be Sure to Read:

WASHINGTON OUTLOOK Under Kennedy . . .

The new Administration is pledged to work toward two interrelated goals: increased U.S. world leadership and a dynamic domestic economy capable of supporting such a world role. For the oil industry, these plans translate into the prime problems of percentage depletion and petroleum imports.

Will the Independent BE DESTROYED?

A producer argues that efforts to eliminate the small-tract operator would push independents into oblivion.

First Half Imports Reduced Only Slightly from Previous Levels

Import allocations east of the Rockies for the first half of 1961 will be higher than expected, averaging 589,896 b/d for crude and unfinished oils and 76,634 b/d for light products.

The totals were set by the Interior Dept. this week, almost six weeks behind the 45-day lead-time that is required in the original regulations that established the mandatory import control program.

The long delay was caused by a lag in issuing a presidential proclamation to change the basis of over-all control, which was not announced until Dec. 24.

It had been expected that three major changes would be made in the proclamation, which would have meant a reduction of about 60,000 b/d in the first-half allocation as compared with the old basis.

The proclamation, however, made only one change—a reduction to correct an overestimate of demand by the Bureau of Mines for the first half of 1960—which amounted to 19,260 b/d less than would have been allocated.

The new quota of crude and unfinished oils is 14,432 b/d below the allocation for the last half of 1960, and 28,322 b/d less than was granted for the first half of this year.

The permissible level of light products imports is unchanged from the previous six-month periods.

The import quota for crude and unfinished oils is based on an estimate by the Bureau of Mines that total demand in the first half in Districts I-IV will average 8,731,000 b/d.

Allocations of residual fuel oil to Districts I-IV were previously set at 530,000 b/d (PW—Nov.25'60,p8).

Historical importers will be cut to 72% of the last voluntary allocation, compared with 75.7% in the last half of 1960.

Also, the refinery input percentages for the first half of 1961 have been trimmed slightly. The formula starts at 11.5% of runs up to 10,000 b/d, compared with 11.8% in the last half of 1960, and works down to 3.8% of runs over 300,000 b/d, compared to 3.9% previously.

The allocations for crude and unfinished imports into Puerto Rico was boosted by 11,851 b/d to 92,684 b/d, based on a change in the base import period.

Starting Jan. 1, crude and unfinished imports there will be based on actual imports into Puerto Rico during July, 1958. The old basis was the third quarter of 1958.

Light products allocations in Puerto Rico for the first half will be continued at 354 b/d, and the residual allocation will remain at 1,644 b/d.

The smaller-than-expected cut east of the Rockies is directly responsible for a reduction in West Coast crude and unfinished oil imports.

Originally, the first-half crude and unfinished oils allocation for District V was set at 229,203 b/d (PW—Dec. 23'60,p12). But it was reduced to 217,500 b/d this week.

The cut of 11,703 b/d was made to cover distortions in demand in Districts I-IV, as well as in District V, due to interdistrict shipments, based on 1958 movements.

F. M. Simpson

John D. King

John A. Welch

No longer a utility . . .

Cities Consolidates Marketing

Cities Service Co. was exempted from its 20-year status as a public utility holding company last week and promptly announced a consolidation of its U.S. marketing operations into one company.

The parent company, which had been subject to the Public Utility Holding Company Act of 1935 since 1941, was granted the exemption by the Securities & Exchange Commission following the elimination of all minority interest in Arkansas Fuel Oil Corp.

Cities Service, which owned a 51% interest in Arkansas Fuel, has acquired full ownership of the company.

The new marketing firm, Cities Service Oil Co., will direct all the petroleum marketing operations in 38 states from the Atlantic seaboard to the Rockies.

It will take over the marketing formerly done through four companies—Cities Service Oil Co. (Del.), Cities Service Oil Co. (Pa.), Arkansas Fuel, and Orange State Oil Co. The latter is a 100%-owned subsidiary of Arkansas Fuel and operates in Florida.

F. M. Simpson has been named president and chief executive officer of the new marketing company.

He has been president of Cities Service (Pa.), the East Coast marketing subsidiary.

John D. King, vice-president of Cities Service (Del.), which markets in the Mid-Continent, will be executive vice-president, and John A. Welch, vice-president of Arkansas Fuel, will be a vice-president of the new firm. He will also serve as assistant to the president in carrying out the reorganization and consolidation program.

Arkansas Fuel is engaged in all phases of the industry, except refining. It markets in the southern states.

The streamlined marketing organization "will materially strengthen Cities Service's competitive position in product sales and will provide greater uniformity in marketing policy and practice," the company said.

"Substantial economies will result from the consolidation, as well as improvements in operating efficiency," it added.

The revamping of its marketing operations is the second consolidation move made by Cities Service.

The company recently announced plans to group its domestic exploration and production operations into a single company—Cities Service Oil (Del.).

Proration? Kuwait Is Getting Doubtful Too

KUWAIT—The Middle East's biggest single oil producer, the Sheikhdom of Kuwait, is also beginning to have second thoughts about the practicability of a world oil proration plan.

Opinion here against the feasibility of export quotas to stabilize prices is not as strongly formulated as in Iran (as reported in these columns from Teheran in the Dec. 9 and 16 issues of PETROLEUM WEEK).

But this conclusion is, nevertheless, gaining ground here as more and more thought is devoted to the endless problems that production restriction schemes would raise.

* * * *

A good illustration is the view of Sayid Ahmed Said Omar, deputy director of Kuwait's finance department. Sayid Omar headed the Kuwait delegation to the Baghdad meeting last September at which OPEC (the Organization of Petroleum Exporting Countries) was formed by Venezuela, Iran, Saudi Arabia, Iraq, and Kuwait. He also represented Kuwait at the organizational meeting of OPEC in November, and headed the Kuwait delegations to both Arab Oil Congresses, in Cairo and Beirut.

"The main reason for forming OPEC," he said here this week, "was to find some way of stabilizing prices. One idea was some sort of proration plan to prevent oversupply.

"But the more I look at it, the less I see how proration could ever work in reality. To be effective, it would have to be joined by every single producing country. The OPEC countries would not be enough. It would also have to be joined by Russia, and the Sahara, and Libya, and Indonesia, and Canada, and the United States, and even Nigeria.

"Otherwise, the OPEC group would only lose markets to any of the sources of supply that failed to participate."

Further, Sayid Omar pointed out, the Kuwait Government could not agree to any proration or export quota scheme under which Kuwait's production would be actually cut; yet the OPEC countries would have to be prepared for substantial cuts in production under any restriction plan that left out any other important sources of supply.

"Our goal in OPEC, I repeat, is to find some way to stabilize prices," Sayid Omar added. "But how to achieve that is something else again. Many different ideas will have to be studied."

* * * *

Another illustration of the shifting attitude is Ashraf Lutfi, an official of the Ruler of Kuwait's secretariat.

A little over a year ago, Lutfi published a book in Arabic entitled "Arab Oil—A Plan for the Future." He enthusiastically endorsed the Venezuelan Oil Minister's oil proration proposal, and devoted many pages to analyzing several alternative quota arrangements for the various countries.

Last month Lutfi issued a revised, 96-page English edition of the same book (published by the Middle East Research & Publishing Center, P.O. Box 1224, Beirut, Lebanon).

The new edition keeps intact the old chapter on proration. But, significantly, a new section has been added, which describes "price consultation" between the governments and the oil companies as a more feasible approach to stabilizing prices.

This "alternative solution," Lutfi's new book says, "would have many advantages over the proration scheme," particularly in that it would not put a ceiling on oil exports.

"According to the proration formula," he says, Kuwait, Venezuela, and Qatar would have to keep their present level of production "with no prospect of any increase for many years to come."

Furthermore, he points out, responsibility for stabilizing prices under a proration scheme would rest with the host governments, "which do not really have anything to do with the actual business of selling and marketing oil."

In any case, much would depend on the cooperation of the oil companies, Lutfi says. And an important argument that oil companies may raise against a proration scheme, he notes, "would be that the companies operating in those countries where production controls were in force would not be able to meet the increase in world demand, in which case other major oil producing countries, such as Russia, would easily be able to capture the new markets."

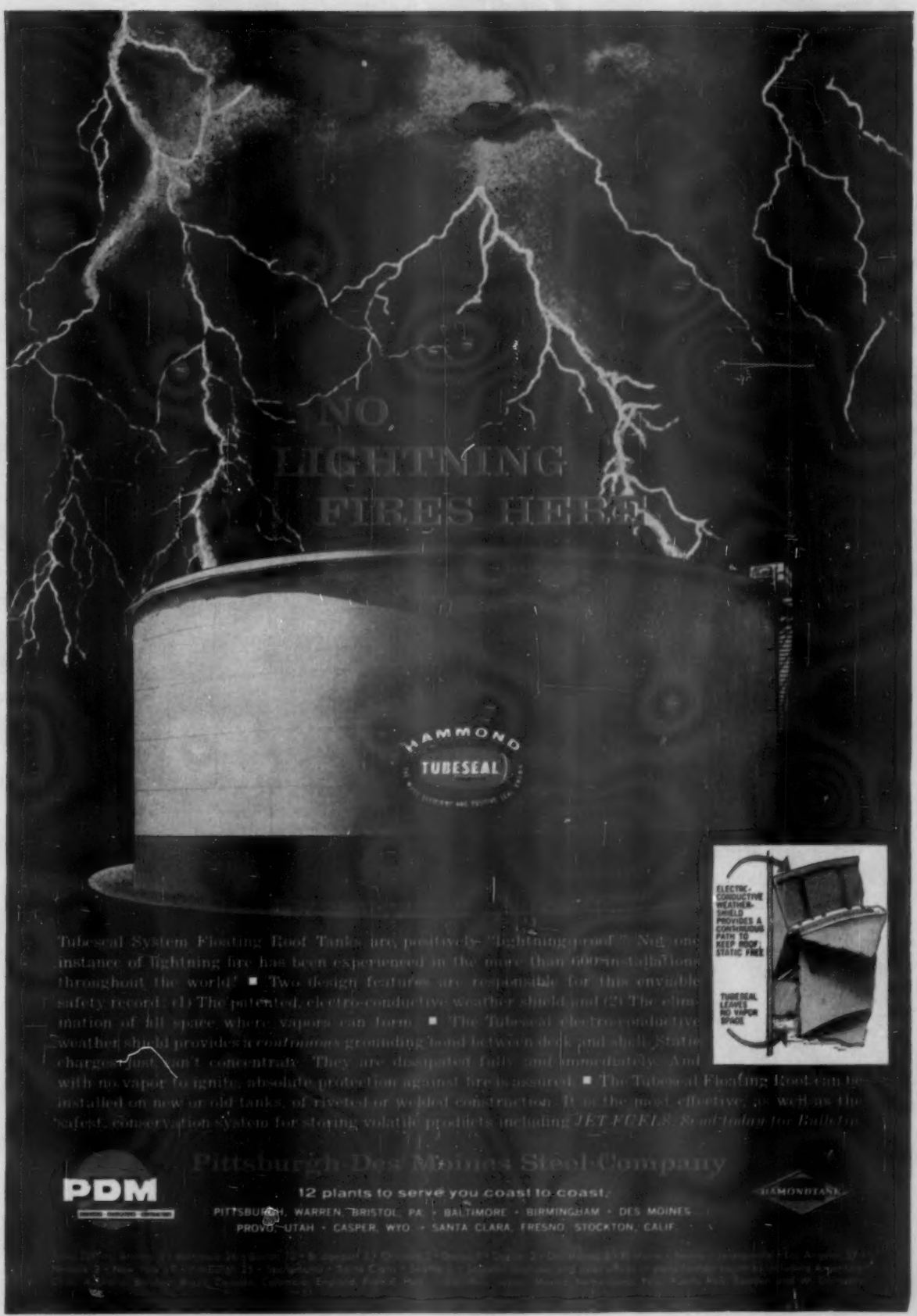
* * * *

Sayid Omar agrees that oil companies must consult with the governments before cutting prices.

"While we want to stabilize prices as much as possible," he told PETROLEUM WEEK, "we realize that oil is like any other commodity, that sometimes prices have to fluctuate, and that we cannot ignore the consumer.

"It is not so much the actual price cut we object to, as the fact that it was done unilaterally by the companies. It's a matter of prestige—and the fact that we are sharing in the profits in the business.

"Many producing governments are entirely ignorant of the problems of the market," Sayid Omar concluded. "So it is important that the companies first come and explain the reasons for a price change. We want to know, and understand, why our revenues are cut."



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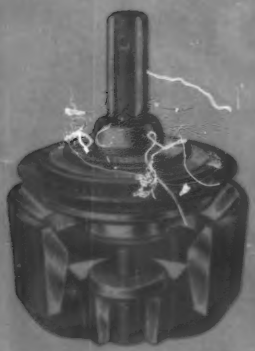

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What's New / IN THE INDUSTRY

Canada hiked its tax rates last week to curb the flow of foreign investment dollars. The government wiped out all special tax concessions that had been designed originally to court foreign investment. Among other things, the tax on dividends paid to foreign parent corporations by wholly owned Canadian subsidiaries was raised from 5% to 15%. And, effective Jan. 1, foreign companies will have to pay a 15% tax on all profits earned in Canada. The government hopes the latter will prompt these companies to incorporate in Canada. The U. S. Commerce Dept. recently estimated that Americans invest about $2-billion annually in overseas facilities, of which about one-third goes to Canada.

•

Louisiana and Kansas have raised their January allowables, but Oklahoma's is unchanged. Louisiana set its January-February crude allowable at 997,417 b/d—the highest since March, 1957, during the Suez crisis. The increase reflects 14,950 b/d for new production. The allowable formula of 33% of the March, 1953, depth bracket was unchanged. The Kansas Corporation Commission set its January allowable at 310,000 b/d—the highest since last April. This represents a boost of 10,000 b/d from December. The recommended flow is 25 b/d in Class B, C, and D fields, and a basic allowable plus 25 b/d for wells in 80-acre-spacing fields. Oklahoma's unchanged allowable is expected to permit production of 515,000 b/d, compared with the November average of 507,000 b/d.

•

Pacific Uranium Mines Co. is being merged into Kerr-McGee Oil Industries, Inc. Stockholders of both firms approved the agreement last week, with the expectation that the merger would be completed by Dec. 30. The merger will give Kerr-McGee an additional 20% interest in Kermac Nuclear Fuels Corp., raising its ownership to 79%. Negotiations are under way to purchase the balance.

•

Some Texas producers can get higher prices for their gas if they agree to drop escalation clauses from their contracts. The Federal Power Commission, in an amendment to the policy statement it issued in September, spelled out new conditions for producers in Texas Railroad Commission Districts 2, 3, 4, and 6. Now they will be allowed 15¢ per Mcf., an increase of 1¢, if they eliminate favored-nation, price-redetermination, and periodic-escalation clauses from their contracts, FPC ruled.

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Union Oil Co. of California is siding with the Justice Dept. in the controversy over stock acquisitions by Phillips Petroleum Co. Union filed a cross-claim in U. S. District Court in Los Angeles seeking these points: enjoin Phillips from voting the Union Oil stock it now owns; prevent Phillips from acquiring additional shares; and force Phillips to divest itself of the Union Oil shares it now owns. Phillips holds about 15% of Union's stock, and contends it purchased it for investment purposes.

•

Texas is now producing 605,093 b/d of field condensates, according to Ernest O. Thompson, chairman of the Texas Railroad Commission. In a year-end statement, the veteran conservation official noted that Texas wells are producing 2,494,242 b/d of crude and 605,093 b/d of condensates, for a grand total of 3,099,335 b/d of petroleum liquids.

THE RACE BELONGS TO THE SWIFT

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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
December 30, 1960

The Kennedy Administration expects the Soviets to continue their trade offensive in oil and other commodities. The Russian oil deals with India and Italy are seen as only a start. This is the belief of some advisors in the Kennedy camp. They are telling the President-elect that some methods many be needed to combat the Soviet inroads.

•

More politically inspired Soviet trades are expected. Africa is a tempting target to the Russians, these officials say, as are countries in Asia and Latin America.

The U. S. and its allies could be forced to try to underbid the Soviets in oil sales. Washington presently looks upon the Russian price-cutting sales as only a drop in the bucket, and without serious economic effect. Should the trend continue and the Russians make notable gains, the Kennedy Administration might consider some mechanism for buying oil and products from free-world oil companies, then discount the price and sell in competition with the Soviets.

•

Government officials rebut claims that the lateness of 1961 crude oil allocations will snarl tanker schedules. Some importers have expressed fears that the delay in issuing allocations for Districts I-IV imports will upset tanker deliveries. But a top Oil Import Administration official says the government doesn't agree—that tankers are not expected to be delayed, and that provisions for adjustments will be made if any schedules are fouled. But just the same, several companies with tankers due on the East Coast on Jan. 1 are nervous. Delays in discharging are expensive. Out-of-service tankers with crews can cost from $3,500 to $9,000 a day, depending on size.

•

A late look at the U. S. embargo on Cuba: Castro is hurting for industrial replacement parts in seized oil refineries. Cuba's lack of such parts is the most telling result, so far, of the U.S. trade blockage. The U. S. recently ran a test on a small pump part from one of the confiscated refiners and found that the part could not be obtained anywhere except in this country. Almost all of the industrial equipment in Cuba is U. S.-built—on the inch-foot basis.

The Castro regime may be able to get around this obstacle, eventually. Khrushchev reportedly will help the Cubans build a new refinery. Cuban Finance Minister Ernesto Guevara has received a pledge from the Soviet Premier that a refinery will be included in an upcoming trade package. Washington officials think the seized refineries are not and will not soon be operating at full efficiency. Entire units of machinery can be replaced—but that method is costly and difficult. New refineries will take time and money.

•

Watch for an important ruling by the U. S. Supreme Court on the Transcontinental Gas-Consolidated Edison gas transportation case. The court will start handing down decisions again Jan. 9, after the holiday recess. High on the list is the Transco-Con Ed case, which will decide whether the utility can have its own gas transported to New York to be used as boiler fuel.

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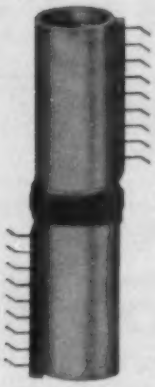

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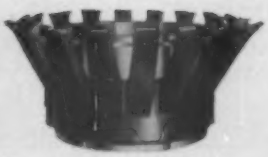

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Oil May Be Found in Any Type Rocks

A Missouri professor believes that oil and gas accumulations may exist in any type of rock—even fractured basement complexes.

H. M. Zenor, professor of geophysics at the Missouri School of Mines at Rolla, outlined his theory this week to PETROLEUM WEEK.

In Zenor's opinion, oil and gas need not be sought only in close association with sedimentary source rocks laid down in marine environments.

H. M. Zenor's theory of how hydrocarbons migrate and accumulate hinges on his premise that hydrocarbons have been generated continuously in all oceans of the world throughout geologic time.

Since hydrocarbons have been formed in all oceans, he reasons, they are not confined to those transgressive (progressively overlapping) seas which later became today's sedimentary basins.

Therefore, he continues, convection currents arising from the temperature differential existing between the oceans and land masses have served to move suspended molecules of hydrocarbons (either in liquid or gaseous form) inland, where they have been deposited in suitable structural or stratigraphic traps.

"If the petroleum originates in the sea," says Zenor, "it will be transported by the circulating currents and deposited in any structural trap available to it.

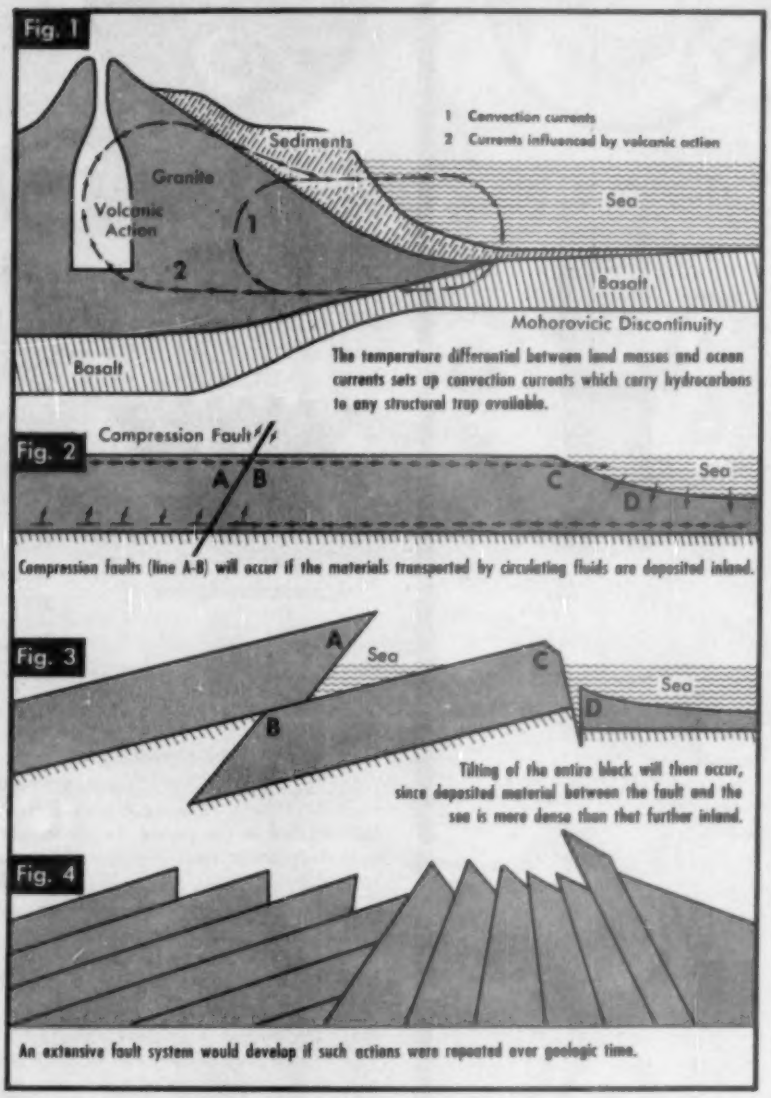
"These traps may be any place in the basement rock wherever a porous section is sealed by a trap either structural or stratigraphic.

"It is no longer necessary for the basement rocks to be above flanking sediments in order that they contain petroleum."

This conclusion appears to be an extension of a theory that was published recently by a team of Michigan University geologists (PW—Nov.4'60, p24).

One of the key points in their study of known basement-rock accumulation was that such accumulations occur where the basement rock is at a higher elevation than the surrounding flanking sediments.

Many of Zenor's conclusions are based on mathematical studies conducted in recent months by himself and Dale Nunley, now a graduate student at the University of Minnesota.



Zenor believes ocean waters—containing hydrocarbons—move inland through basement rocks under pressures due to the temperature differential known to exist between land masses and oceans.

"Due to the temperatures being greater under land-covered areas than for the same depth in the adjacent oceans," he says, "a pressure difference on the order of 1,000 psi. is available to circulate waters from the bottom of the oceans through fractured basement rocks landward, and thence to the surface through permeable sedimentary formations.

"At or near the surface, these saline waters are increasingly diluted by meteoric waters before eventually returning to the sea" (line 1, fig. 1).

Hydrothermal pressures greater than 15,000 psi. are possible under certain conditions, says Zenor.

The Missouri professor explains that it is conceivable that pressures greater than 15,000 psi. may occur in deep-lying formations under favorable conditions.

"If, for example, waters are vaporized at depth by volcanic action, and

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allowed to escape to the atmosphere unimpeded," he says, "great pressures would be generated to influence hydrodynamic interactions" (line 2, fig. 1).

Zenor, therefore, envisions a continual fluid motion (hydrokinetic action) which might be likened in principle to the steam turbine.

Interaction with other orogenic (mountain-forming) forces throughout geologic time could account for the movement of vast quantities of saline waters through the land masses of the world, he believes.

Zenor feels his theory explains the lack of extensive sediments in the ocean deeps. It also may explain the maintenance of continents and the building of mountains.

Since ocean waters contain carbon dioxide dissolved from the atmosphere, Zenor continues, "they are capable of dissolving calcium carbonate and other minerals in the ocean deeps, carrying them inland and depositing them in the continents.

"As the waters continue landward through the basement complex, they become heated, thereby increasing the solubility of other minerals encountered enroute. As additional mineralization occurs, the solutions become more complex and appreciable mineral loads are carried.

"As the solution continues to the surface of the continents, or to other regions of reduced temperature and pressure, the minerals drop out of solution and are deposited.

"The remaining fluid is diluted with incoming meteoric waters and returns to the ocean.

"Thus we see that as the ocean waters pass through the cracks and crevices below the sea bottom, sedimentary materials, as well as rocks of igneous and metamorphic origin, are weathered and dissolved."

Heavy concentrations of salt in sea waters of Jurassic and Permian times, plus tropical climatic conditions, could account for the deposition of thick "mother" salt layers believed to underline the base of salt domes.

Zenor points out that the solubility of sodium chloride is well known, and it has been observed that many normally insoluble minerals become quite soluble at the temperatures and pressures encountered at the depths through which these fluids pass.

As a solution of this nature passes through an essentially semipermeable membrane, such as would be formed by various compact shales, salts would be deposited in underlying strata, perhaps eventually displacing them through buoyance, tectonics, or other natural phenomenon.

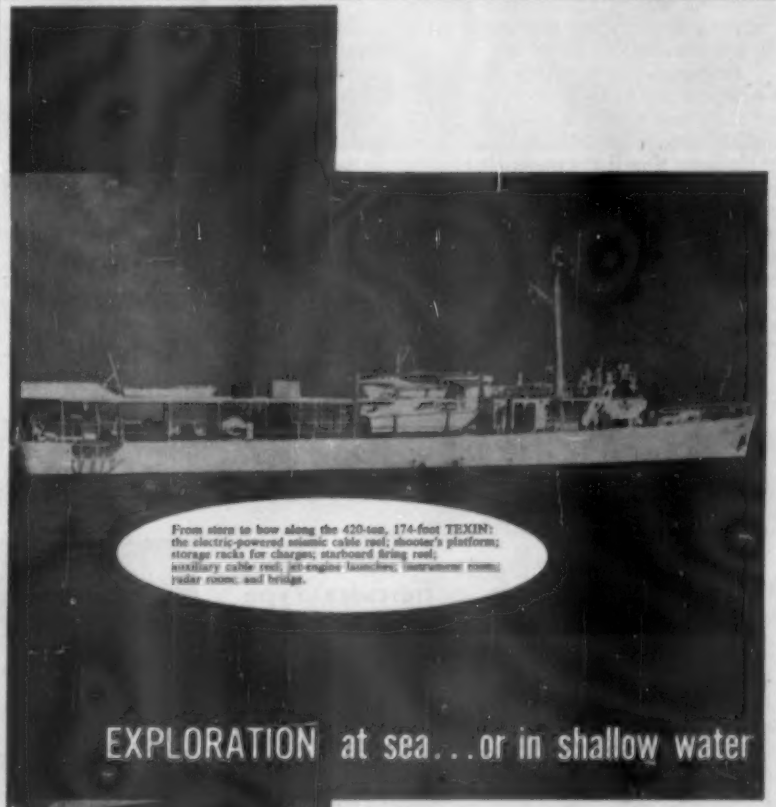
Zenor observes that the nearness to the surface of the Mohorovicic Discontinuity underlying ocean depths tends to substantiate his theory.

"As the bottom of the seas is dissolved," he says, "the crust is lightened and materials from the depths are forced upward from below in order that isostasy (equilibrium) be maintained."

Zenor agrees with others who have theorized that the difference in materials of the crust above the Moho will be found to differ from those below primarily in phase rather than in composition. If this be so, Zenor says, the Moho will tend to rise under the oceans and settle under the land throughout geologic time.

This is true, he contends, because the accumulated weight of continuously deposited material will force mountain roots deeper and deeper into the crust underlying the continents, while removal of basement rock by weathering of the ocean floor will have the opposite effect at sea. In each instance, he asserts, the phase transition is delayed in time, accounting for the Mohorovicic Discontinuity.

Zenor also believes that the lack of metamorphosed rock overlying the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Moho in the ocean depths is an indication that the seas and continents have maintained themselves essentially as they are today, since pre-Cambrian time.

"If at any time in the past," he adds, "there were sufficient sediments in the oceans to metamorphose into granite, it has long since been dissolved and deposited on land."

The existence and basic differences between faults underlying the oceans and those underlying the continents are considered by Zenor.

"It has been hypothesized by others that the faults occurring below the oceans are tension faults, while those occurring beneath the continents are compression faults," he notes.

"This would be a necessary condition if the materials below the oceans are rising and the materials of the continents are lowering."

He notes that if the materials transported by circulating fluids are deposited inland, a compression fault will occur (line A-B, fig. 2). Then, since deposited matter between the fault and the seashore has greater density than that farther inland, the entire area will tend to tilt as a block (B-C, fig. 3).

The downthrown side of the compression fault, plus ensuing tensional faults (D-C, fig. 3), will assist in the formation of ocean deeps.

This initial relief of tensions and compressions, however, will not alleviate movement, since deposition will continue. And, as additional material is laid down, Zenor believes that the fault block might travel hundreds of miles during geologic time. Should this action occur repeatedly, an extensive fault system undoubtedly would develop (fig. 4).

Zenor notes that such conditions have been observed in the drilling of oil wells, where the same formation is penetrated several times within the same borehole.

Zenor believes proof of his theory must await further evaluation of work conducted during International Geophysical Year, plus additional studies conducted specifically for the purpose.

Says Zenor: "The basic step must, of course, be to determine the paths of convection currents during periods of widespread hydrocarbon generation. Work done during IGY likely could serve as a springboard, but additional detailed studies will be required."

One initial approach that Zenor feels might yield good results is the use of widely spaced electrodes to check telluric currents over fairly extensive areas of the earth. This information might then be correlated with geothermal data obtained from temperature surveys conducted in widely scattered wells.

On the basis of these data, Zenor believes it would be possible to draw maps that would indicate historic hydrokinetic patterns over broad, general areas. Conventional geologic and geophysical methods would then be required to pinpoint likely drillstems, since actual hydrocarbon accumulation would depend on the existence of structural and/or stratigraphic traps—whether in basement or sedimentary rocks.

Zenor also believes that a much greater correlation between geochemical maps and deep structure would occur if the samples to be tested were taken at sufficient depth to give a measure of the content of the waters rising from great depths, rather than taken at the surface, which has been thoroughly washed by surface waters.

But, as Zenor notes, the basic premise of his theory—hydrocarbon accumulation in basement rock regardless of its position with respect to sedimentary source beds—can be evaluated in many instances by the simple expedient of drilling into rocks of the pre-Cambrian.

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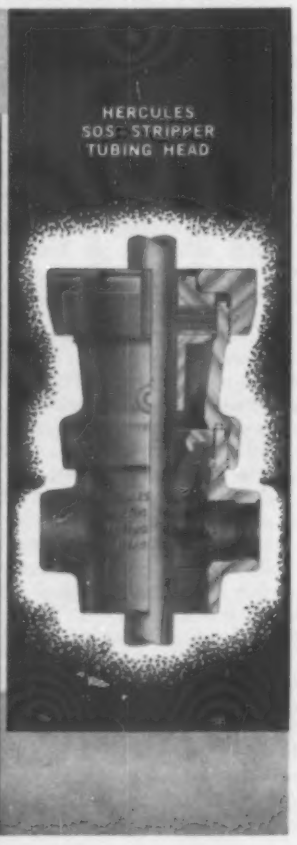

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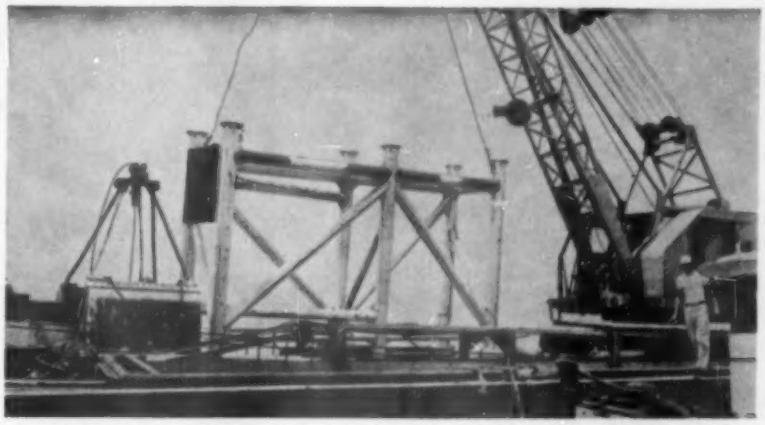
Two More Oil Uses Found for Aluminum

● For oil well guards and templates in coastal waters

The first aluminum oil well guard and template ever placed in coastal waters of the United States has just been installed off Texas.

The well guard structure was fabricated by Brown & Root, Inc., from aluminum supplied by Reynolds Metals Co. Reynolds engineers worked closely with Brown & Root and a major oil company in the design of the structure.

Robert S. Edwards, manager of Reynolds' petroleum market, says, "We believe this is the first all-aluminum permanent structure ever erected in salt water. The success of this project is expected to lead to other similar uses for aluminum."



ALUMINUM OIL WELL GUARD is being installed off the Texas coast.

The aluminum structure is expected to eliminate corrosion and maintenance problems normally encountered with offshore units. The light weight of the aluminum structure also makes it easy to handle, ship, and install.

Well guards now used in Texas bays tend to corrode and eventually need sanding, repainting, and replacement of parts.

The well guard and template were shipped as a unit, simplifying assembly.

Such shipment was possible because of the metal's light weight. Installation of the template was handled with a minimum of equipment, reducing installation time by at least four hours.

The aluminum well guard is of tubular construction and is designed in two parts: (1) the template (lower part), and (2) the well guard (upper part).

Aluminum grating is used as a platform deck.

Use of extruded "saddles" at welding connection points, giving better load distribution, is one of the key design features.

Steel sleeves through which pilings have been driven were placed in each of the template's aluminum legs. The space between the steel sleeves and the aluminum legs has been filled with lightweight concrete.

The area within the well guard is 7 ft. x 9 ft., which provides 20 sq. ft. more working space than was possible with structures used previously.

● And for tank trucks that haul liquid drilling muds

Some 50% more liquid drilling mud can be carried by trucks using aluminum vacuum tanks. That's the claim being made by aluminum manufacturers.

Normally, mud is hauled by trucks mounted with steel tanks. Because of steel's weight, these trucks generally have been limited to a capacity between 50 bbl. and 55 bbl.

Use of the lighter-weight aluminum is said to boost carrying capacity to as much as 75 bbl.

This additional capacity, one aluminum company says, will offset the aluminum tank's higher cost—roughly 25% more.

Other advantages claimed for the aluminum tanks are a minimum of maintenance, corrosion-resistance, and a faster welding time in fabrication.

The tanks can be used to haul all petroleum products and most drilling muds.

Highly alkaline muds (with a pH factor above 10) are not recommended for transport in the aluminum tanks.

ALUMINUM TANK on Alice Specialty Co. truck boosts its capacity.

The current design of the tanks calls for a 1/4-in. aluminum alloy.

Curtis D. Kelly Co., a Houston fabricator, and Reynolds Metals Co. jointly developed the aluminum tank truck. Curtis Kelly has just completed one such tank for Alice Specialty Co., Alice, Tex., and is building five more for the same firm.

The vacuum tanks are 6.2 ft. in diameter and 14.6 ft. in length.

A three-way pump mounted directly in back of the truck's cab controls the suction and discharge of the liquids. To load, the pump creates a vacuum in the tank, thus causing liquids to be sucked into the tank.

As the tank fills, a ball check valve located inside the tank will seat itself and stop the vacuum action of the pump. For delivery, the pump engine is reversed.

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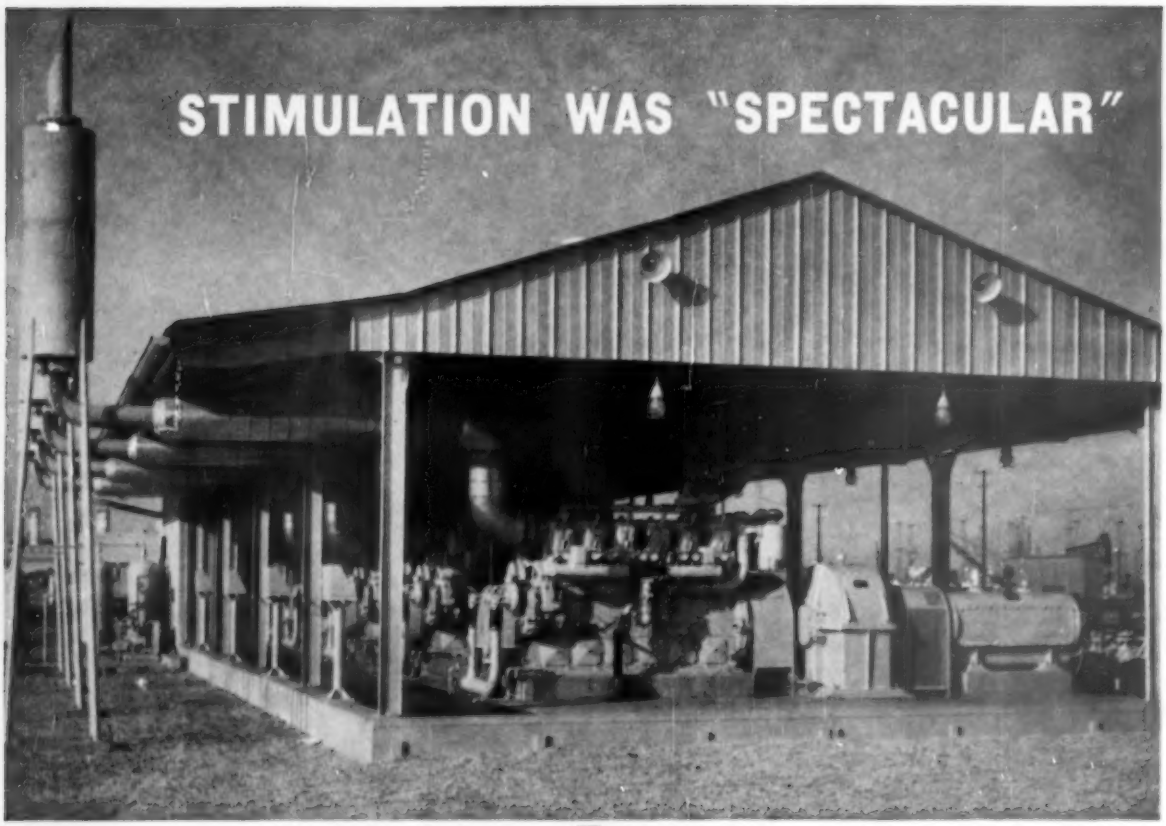

waterflooding at Long Beach with WAUKESHAS

The waterflood repressuring project—under Long Beach City property, in the Wilmington California Oil Field—is probably the country's largest. The Waukesha-Engine-powered Pier E station is the project's second water injection plant. Ten months after its activation, stimulation observed was "spectacular" as one expert put it.

Four Waukesha V-12 natural gas engines drive four Oilwell 558-P Quintuplex Plunger Pumps. Each pump delivers a volume of 20,400 bpd of salt water at a pressure of 1270 psi—at 175 rpm max., with 5-in. diam. plungers. The pumps can operate at 2000 psi, with 4-in. plungers, and deliver 11,150 bpd.

The four Waukeshas are Model VLROB natural gas engines, 12-cylinder, 8½ x 8½-inch bore and stroke, 5788 cu. in. displ. Engines are set to max. full load speed of 1020 rpm to give approx. pump speed of 175 rpm driving through speed reducers with 5.857:1 ratio.

These Waukesha Engines are equipped with S-69 Western Gear speed reducers; Ross 1204-CP Heat Exchangers; couplings—engine to reduction gears, 28-CB-525 Fawick—gears to pump, Fasts No. 6.

Send for Waukesha Bulletin 1656.

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What's New / IN PRODUCTION

Underwater Completion Planned off California

Richfield Oil Corp. (L.A.) is planning the first underwater offshore completion off California on its state oil and gas lease at Rincon, Ventura County. The company has already applied for a permit from the U.S. Corps of Engineers.

Earlier this year, Richfield announced a successful underwater completion off Peru (PW—Aug.26'60, p20).

Officials say this completion will be comparable to what they tried in Peru, with a few changes in equipment.

The production head will be enclosed in a covered protective steel cylinder, rising 12 ft. above the ocean floor. Top of the cylinder would be more than 50 ft. below the ocean surface at low water. Completion would include three 2-in.-diameter pipelines.

•

Between 6,000 and 10,000 holes—or even more—will have to be drilled to evaluate the oil and gas potential of British Columbia's Peace River area.

That's what W. K. Kiernan, British Columbia's Minister of Mines & Petroleum Resources, told the Canadian Assn. of Oilwell Drilling Contractors at its annual meeting. To date, more than 600 tests have been drilled in the 34-million-acre area.

Kiernan said the province's 233 gas wells have a combined production capability in excess of 1-billion cf/d, and that its 100 developed oil wells account for proven reserves in excess of 68-million bbl.

At a press conference later, he said that on the basis of wells drilled, the province has a "probability" of 12,000 b/d of oil, which could double with some development work. He also said he expected Peace River crude to be marketed in the Vancouver area "one way or another" in 1961.

•

An Oklahoma City independent will attempt the first quadruple completion in Oklahoma.

The Oklahoma Corporation Commission has approved Gill Oil Co.'s request to quadruply complete its No. 2 McAfee, section 22-3s-4w, on the northwest edge of the Healdton field, Jefferson County.

The company plans to produce the test from the Healdton sand at 1,596 ft., the upper Fusilinid at 2,098 ft., the lower Fusilinid, at 2,207 ft., and the lower Des Moines at 2,288 ft.

•

A lease sale on more than 40,000 acres in the Tule Creek area of Roosevelt County, Mont., will be held on Jan. 17.

The Ft. Peck Indian Agency is offering 198 tracts—73, covering 10,219 acres, are tribal land and 125 are individually alloted lands. The tracts lie in sections 29n through 31n, 46e through 49e.

Murphy Corp.'s Devonian discovery in this area kicked off what promises to be a very substantial play within the Montana portion of the Williston Basin (PW—Oct.21'60,p60).

According to preliminary reports, the agency will hold another sale in February.

•

Union Texas Natural Gas Corp. is entering the field of applied physics and advanced electronics through a newly formed company, Quantatron, Inc., Santa Monica, Calif.

Robert M. Salter, Jr., has been named president and general manager of the new company.

Coast Exploration Co., Los Angeles, is getting under way with an intensive drilling program on its newly acquired 30,000-acre gas and oil properties in the Polo Gas Field, northwestern Missouri. The price was not disclosed.

Included in the purchase, made earlier this month from a group of independents, are 22 gas wells, which have been shutin for several years with no market outlet.

•

Alco Oil & Gas Corp., Chicago, has merged with Breuer & Curran Oil Co., also of Chicago.

Operations will be combined under the Alco name, with headquarters in Denver. The merged company will be operating more than 150 wells,

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and will hold in excess of 23-million acres under lease or concession in the U.S. and abroad. Included in the merger are these Breuer & Curran affiliates: Lamontex Reserves, Inc.; XLT Co., Ltd.; and B & C Exploration Funds, Inc.

•

This month's New Mexico state land office sale of oil and gas leases brought in a total of $218,528.

A total of 14,127 acres in Chaves, Eddy, Lea, and San Juan Counties was sold in the regular sale. Highest bid was $28,000 by Southern Minerals Corp., Corpus Christi, for 560 acres in Tract 27, Lea County. There were no oral bids.

In a special sale on nonrestricted acreage, the state got $27,812 for 35,922 acres.

•

Drilling Highlights

California—Atlantic Oil Co. No. 1 U. E. Frye, section 27-15n-1e, Sutter County, flowed 12.3-million cf/d of gas through 7/64-in. choke from an over-all interval from 5,900-6,173 ft. and 12.1-million cf/d through 7/64-choke from an over-all interval from 6,655-820 ft. Production is from F zone sands. The dual gas discovery is 2 mi. northeast of Grimes field.

In Madera County, Solar Drilling Co. No. 77-17 U.S. Royalty, section 17-12s-15e, flowed gas at the rate of 4,060,000 cf/d through ½-in. choke and perforations at 3,936-4,000 ft. in the Howard. The test had been abandoned at 6,716 ft. in 1958 by Union Oil Co. of California. The discovery is 2 mi. southeast of Moffat Ranch gas field.

In Solano County, Reserve Oil & Gas Co. et al No. 2 Liberty Farms-Reynolds, section 19-5n-3e, flowed gas at the rate of 3.9-million cf/d through 24/64-in. choke. Production is from Midland sands at 4,726-44 ft., 4,755-63 ft., and 4,773-83 ft. The well is 2½ mi. southwest of Liberty Cut field.

Colorado—Utex Exploration Co., Inc., No. 1 Cal, section 26-8s-90w, Pitkin County, flowed gas at the rate of 3.5-million cf/d through perforations at 4,658-708 ft. in the Cozette (Cretaceous) sand. The prospect is 5 mi. east of Divide Creek field. There is no present oil or gas production in Pitkin County.

Northwest Louisiana—Murphy Corp. No. 1 Greer, section 10-23n-6w, Claiborne Parish, recovered 2,225 ft. of oil and 375 ft. of salt water on test of the Smackover at 9,963-10,005 ft. The prospect is 2½ mi. north of Smackover production in Colquitt pool.

Arkansas—Mull Drilling Co., Inc., No. 1 N. L. Mayner, section 28-10n-26w, Franklin County, flowed 10.5-million cf/d of gas through open hole from 3,690-4,110 ft. in the Orr sand. Previously, the prospect flowed up to 2,330,000 cf/d of gas from a series of sand breaks below the top of the Cecil Spiro at 3,065 ft. The multipay prospect is 1 mi. north of shallow production in the Ozark field.

Army Seeks Bids on Deep Disposal Hole

Army Engineers are calling for new bids Jan. 10 for the drilling of an 11,400-ft. waste-disposal well—believed to be the deepest of its type—at the Rocky Mountain arsenal, near Denver.

Loffland Bros. Co. bid $306,861 at the Army's Dec. 15 call. It was the lower of two bids received. It was rejected, however, because it was greater than the permissible 20% maximum by which a job can exceed the Army's estimate. The Army has estimated it would cost $234,316.

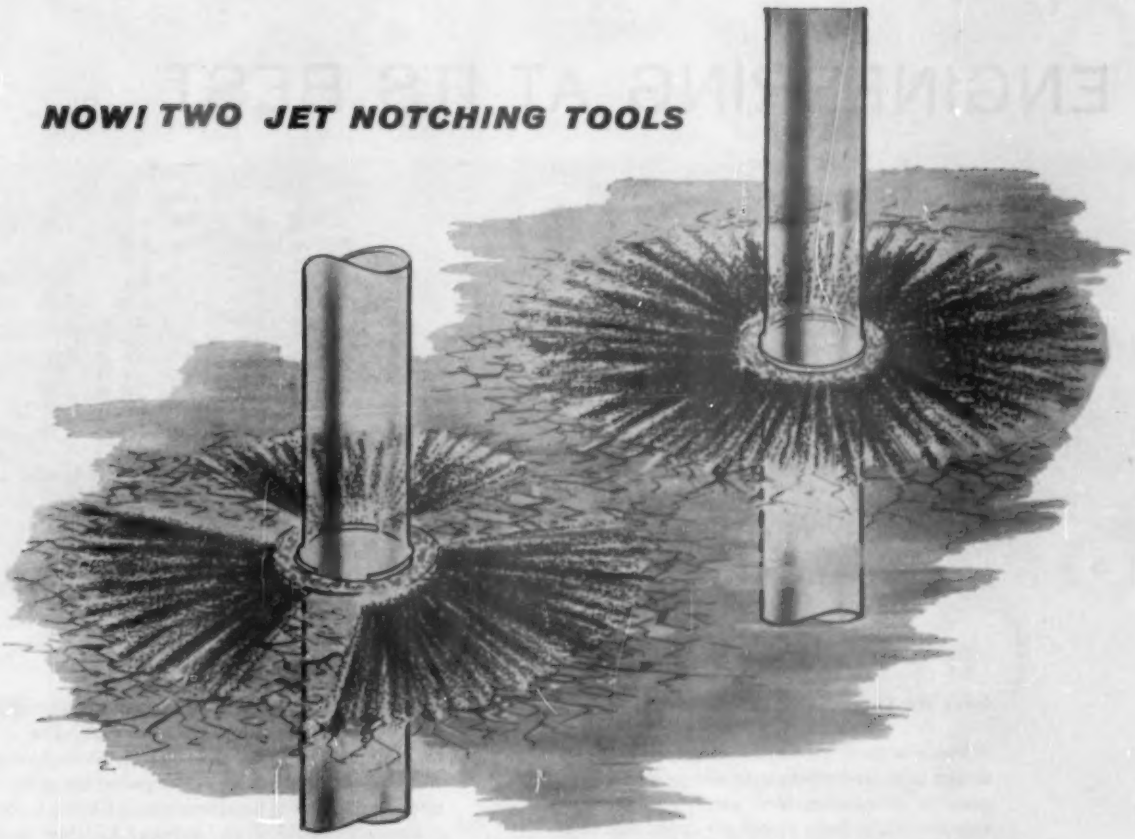
The Army said it is readvertising for bids because of the "unfavorable" bidding response. The new bids will be on a straight day-work basis. Equipment used must be capable of reaching 12,000 ft. In the previous call, the Army had asked for equipment capable of reaching 13,000 ft.

The hole is attracting oil interest because it is expected to shed some light on the deep geologic makeup of the Denver-Julesberg Basin.

The 24-in.-diameter hole is slated to be the deepest test ever drilled in the basin by approximately 2,500 ft.

The well is being designed to have a capability of 2,000-psi. injection pressure at the surface. Several safeguards against leakage are also being incorporated.

NOW! TWO JET NOTCHING TOOLS



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McCullough's new Triple Frac-Notch Cutter, companion tool to the widely used Frac-Notch Cutter, is gaining extra production for operators wherever hydraulic fracturing is required for well completion or stimulation.

Where the Frac-Notch Cutter produces a full circle, horizontal notch around the well bore, the new Triple Frac-Notch Cutter makes three separate notch cuts simultaneously at the same depth in the well, on a single run. Each notch cuts through casing and cement and cuts and fractures as much as 15" into the formation. *A segment of uncut casing is left between each notch.* When hydraulic pressure is applied the formation is fractured between each notch, giving the effect of full-circle fracturing.

The McCullough notching process is the most effective of all single-point entry methods of fracture initiation. The enormous power of the cutting process notches into the formation and also fractures the formation for some distance beyond the face of the actual cut. Thus, lower hydraulic fracturing pressure is required for initial breakdown, a greater area of formation is more effectively fractured and the flow capacity of the treated formation is greatly increased.

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Sizes available for: 4½", 4¾", 5", 5½", 5¾", 6⅝" and 7" OD casing. (The Frac-Notch Cutter is also available for 2", 2½", 3" and 3½" tubing.)

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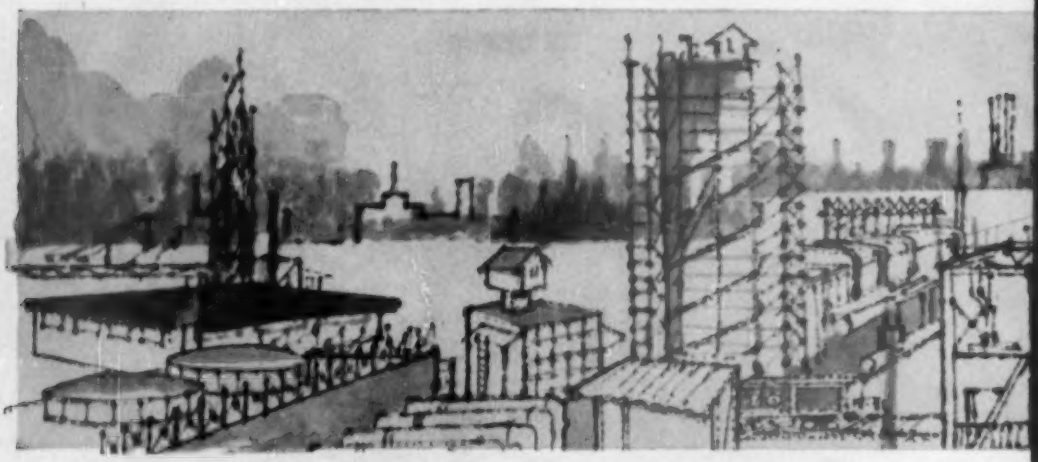


WHAT YOU SHOULD EXPECT

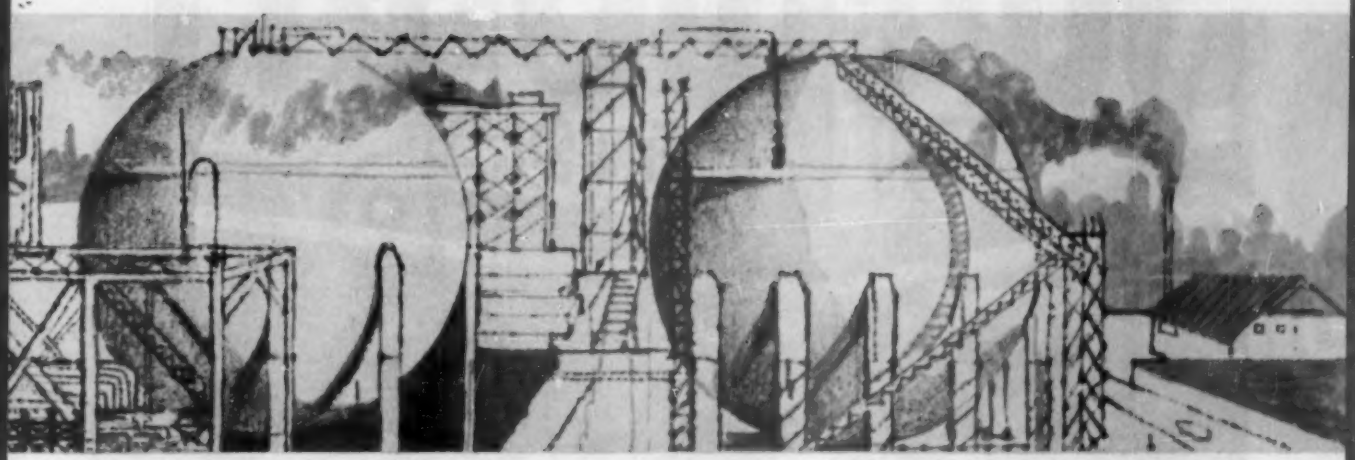
When you go to an engineering firm for help in the design and construction of a new plant, or the expansion of existing facilities, you have a right to expect certain basic standards from that firm. They should have EXPERIENCE, for only with past experience can you minimize the number of new problems which will arise on any new project. Such experience, however, should be tempered with FLEXIBILITY, CREATIVITY and VISION. Some companies are experienced beyond measure at building plants from designs more than 25 years old. In the highly competitive years ahead, such plants could prove economically unsound. You owe it to your company's future to select a firm which has proven its ability to provide the newest and the best in process engineering.

For almost half a century, CHEMICO has maintained a reputation for progressive and imaginative process design and improvement. This proven "know-how" is available to firms in the chemical and petrochemical fields requiring any and all types of engineering and construction services.

WAYS OF WORKING WITH THE CLIENT

A recently completed petrochemical plant offers the best example of the several ways in which CHEMICO is prepared to work with its clients. This huge complex was designed to produce acetylene derivatives, and included processes for producing a wide range of basic chemicals. The ammonia, sulfuric acid and ammonium sulfate sections of this plant were based on *Chemico's own proprietary processes.* The designs for the acrylonitrile and hydrogen cyanide units were based on processes developed in the *client's own pilot plant.* For the acetylene plant, CHEMICO *obtained a license* from BASF in Germany for their patented production-proven process. The oxygen plant was designed by the Linde Company of Germany on a *sub-contract basis.* CHEMICO's Construction Department was responsible for erection of all the plants, and CHEMICO's Industrial Projects Department supervised, coordinated and controlled the entire project.

CHEMICO is always prepared to provide its services to clients on any or all of the bases indicated above. For clients with processes of their own, CHEMICO's Industrial Projects Department will engineer and construct plants, starting at any stage of development. CHEMICO's own laboratories and pilot plant are available, if desired, for process development and improvement work on a contract research basis. If the process to be employed has already undergone pilot stage testing, CHEMICO will design the most economic and efficient commercial scale operation. In such a case, the client can be sure that CHEMICO will call on the services of outstanding engineers and technical personnel with experience similar, or related to the unit operations which are to be designed, engineered and constructed. In addition, the client can be assured that CHEMICO, as an independent engineering organization, will undertake such activities in the framework of a completely confidential relationship,



with all necessary safeguards for protecting the client's competitive position in regard to trade secrets and research developments.

In the case of clients who want plants to produce products for which neither CHEMICO nor the client has a process, CHEMICO, through its Industrial Projects Department, will obtain licenses from whatever source possible for production-proven process designs which will enable the engineering and construction of the desired plant.

Very often CHEMICO's drafting force as well as its specialists in civil engineering, mechanical engineering, electrical engineering and other service engineering capacities can be made available to clients on an individual contract basis. CHEMICO's construction organization, made up of a permanent force of highly experienced construction superintendents, is prepared to undertake a wide range of erection projects related to the process industries.

CONTRACT ARRANGEMENTS

CHEMICO offers its clients a wide choice in the type of contract under which each individual project is to be handled. Among the more common arrangements—although by no means the only ones available—are the following:

Cost Plus Fixed Fee: Under this type of contract, CHEMICO's fee and overhead charge for engineering, construction and related services is decided by mutual agreement, and the client is billed at direct cost for any and all expenses incurred by CHEMICO to complete the client's project.

Lump Sum: At the client's request, CHEMICO submits a firm estimate containing a specific price for which CHEMICO will undertake to complete the client's project.

Guaranteed Maximum: Under this type of contract, CHEMICO will set a maximum cost to the client for an individual project. If the cost of the project falls below the maximum figure, all savings will be divided between CHEMICO and the client on the basis of a prearranged rate.

Fixed Price Equipment Supply: Under this type of contract, the client gets the benefit of CHEMICO's design, engineering, purchasing and expediting services, but is free to make his own arrangements for the construction of his project.

Basic Design and Construction Supervision: This type of arrangement has proved extremely useful in dealing with clients outside the United States. Ordinarily, under a contract of this sort, CHEMICO provides the basic engineering for a project, and the client makes other arrangements for the detailed drawings and construction. CHEMICO then supervises construction and sees the project through start-up operations.

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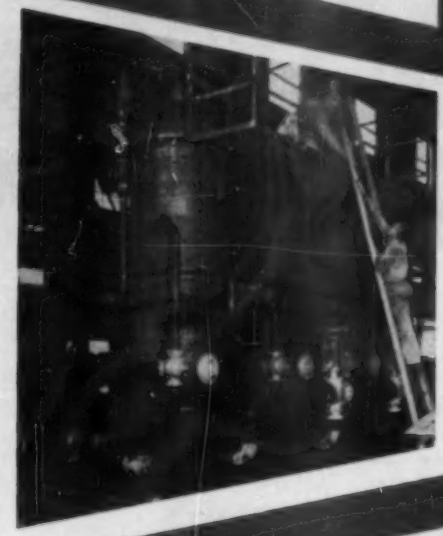

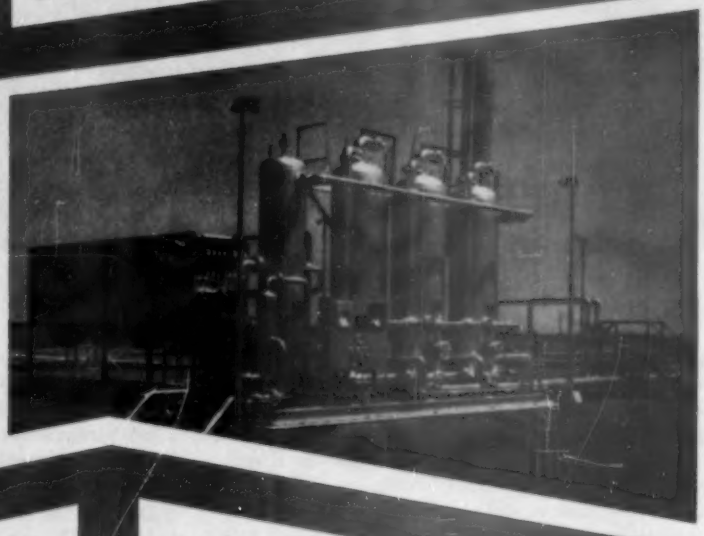

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Isotopes: An Increasingly Valuable Tool

- **They are unbeatable for on-stream inspection. The tracer technique speeds up work in chemical and engine laboratories, and simplifies flow studies.**
- **Programs for the training of radioisotope specialists multiply in refineries and petrochemical plants.**

A greater and more versatile use of radioisotopes is being made in refineries and petrochemical plants, as confidence in their effectiveness and safety grows (PW—Oct.9'59,p76).

"Today, radioisotopes must be considered the foremost peaceful, civilian application of atomic energy," Paul C. Aebersold, director of the Office of Isotopes Development of the U.S. Atomic Energy Commission, told the recent annual meeting of the American Society of Mechanical Engineers, in New York. "Radioisotopes are truly the success story of atomic energy."

Radiation sources are constantly being improved and made safer.

For industrial uses, Aebersold said, radioisotopes are among the safest tools available. Isotope gages are carefully designed to avoid radiation exposure of the operator, to be immune to tampering, and to avoid leaking or scattering of radioactivity even in the event of fire or explosion.

One of the latest sources of radioisotopes is Krypton 85, which has a very high specific activity and is extremely safe to use, Aebersold said. In the unlikely event of source destruction, the gas simply dissipates in the atmosphere. None of the isotopes of Krypton enters into the metabolic system of man's body.

To overcome the lack of trained men—which has, for a long time, prevented radioisotopes from being used to their greatest advantage—many refiners have instituted radioisotope training programs.

Shell Oil Co., for example, used to send its personnel specializing in the use of radioisotopes to take the long course—2 to 3 weeks—at the Oak Ridge (Tenn.) laboratory of AEC. Later, the specialists went to the shorter course given by Tracerlab, Inc.

But now, Shell has a five-day program of its own. The students are exposed both to theory and field demonstrations. In addition, they must do a substantial amount of homework. They are given a manual specially prepared for this course. "The emphasis is on safety," says E. L. Claridge, of Shell's manufacturing research department.

The instructor is generally the refinery's "radiological safety officer." This is a post that Shell has created for the purpose of inspecting and approving every application of radioactive material in the plant.

Shell now has developed a sizable staff—about 35 men—thoroughly familiar with the use of radioisotopes.

Such training programs are becoming increasingly popular in the industry.

Several are patterned after the "Radioisotopes in Industry Training Program" of General Motors Corp., which Robert E. Black, G.M. research physicist, described at the ASME meeting.

"About 70% of the students who have attended the course since its inception in May, 1957, have used their training in one or more practical projects," said Black.

One of the widest applications of radioisotopes in refineries is for on-stream inspection of equipment.

Radioisotopes share with X-rays the privilege of making it possible for refiners to follow the condition of their equipment, particularly in places where corrosion and wear may become critical, without stopping operation (PW—Jan.15'60,p37).

All sorts of physical measurements can be performed with the help of radioisotopes, including measurements of thicknesses, levels, concentrations, and densities.

"Radioisotope technique is giving X-ray and gamma-ray inspection a new look," Aebersold told the ASME meeting, "by supplying new radio eyes that are compact and portable, and which have different ranges of penetration, suitable for thin welds as well as for huge castings."

Today there are 440 companies in the U.S. licensed to do radiographic inspection with radioisotopes, Aebersold indicated.

Another widely growing application of radioisotopes in the petroleum industry is the "tracer technique."

Tracer applications are based on the fact that radioisotopes can be detected in almost incredible dilutions.

"In the laboratory, tracer technique is becoming very popular," Dr. Vincent P. Guinn, of Shell Development Co., said at the Atomic Industrial Forum in San Francisco earlier this month. "This is due to the recent development of low-cost, versatile instruments, and improved analytical techniques."

Chemical analyses performed with the help of radioisotopes can be both qualitative and quantitative.

"The principal advantage of the technique," Guinn said, "is its speed. Results can often be reported in 15 to 20 minutes, versus hours and sometimes days for conventional chemical methods of analysis."

One interesting recent development consists in relying upon "isotope dilution." Here, an amount of a radioactive element of known specific activity—that is, mixed in a known ratio with stable atoms of the same element—is introduced into the sample to be analyzed. Any change in that ratio will be due to the dilution caused by the amount of the same element originally present in the system. Thus, the amount can be determined by the change in the ratio of the radioactive element to the stable element.

In the engine laboratory, one of the essential functions of the tracer technique is for wear determination.

Here, isotopes are produced by neutron activation of the equipment under study. The material that wears off is measured for radioactivity.

The influence of fuels, lubricants, and operating variables in engines can thus be studied simply and quickly.

In the study of flows, new applications for the use of radioisotope tracers are continually showing their practicability.

The petroleum industry has been using radioactive tracers all the way from the oil well to the finished products.

One of the earliest uses of radioisotopes was to mark the interface between different petroleum products flowing consecutively in the same pipeline; and to determine flow rates.

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tracers method have grown up since the early days.

Gamma-ray-emitting isotopes, for example, can be added at certain spots to the mass of catalyst in a fluid cat cracker, to keep track of the movement of the catalyst through the unit.

Shell is currently using the technique to study the flow distribution through its trickle-phase hydrotreaters. Carbon-14 isotopes are added to a C_{36} hydrocarbon included in its feedstock. The radioactivity of effluent-stream samples is measured with a scintillation counter, at given intervals. In this way, Shell says, a clear picture can be obtained of the "residence time" of the product with relation to the cross section of the catalyst.

There are many other areas, where radioisotope tracers are now being used. Among them:

- Leak detection. An extremely small fraction of isotope added to a refinery stream, or in an oil or water line, makes it easy to detect minute leaks with the help of a radiation detector.
- Toxic gas detection. Radioactivity can be detected at levels millions of times below the concentrations that can be detected chemically.

A growing application of radioisotopes is based upon the principle that radiation—in large doses—affects the structure of materials.

Many processes today are based on this principle in the petrochemical industry, and more are continually being discovered (PW—Nov.11'60,p76).

Osmometer 'Weighs' Molecules

The delicate task of determining molecular weights of liquids or soluble solids, such as polymers, is greatly simplified by using a new vapor-pressure Osmometer, developed by Mechrolab, Inc., Mountain View, Calif.

Heretofore molecular weights were determined by relatively difficult and slow cryoscopic (low-temperature) and vaporizing methods, involving barometric corrections. The new method takes only a few minutes.

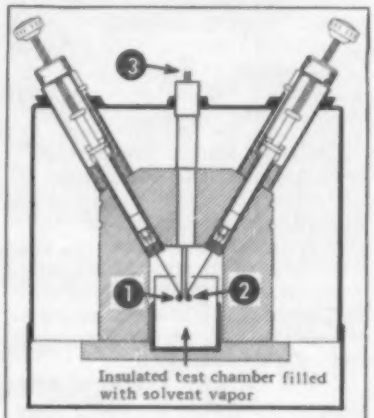
The Osmometer uses the difference in temperature sensitivity between two matched "thermistors"—very sensitive thermocouples—one covered with a pure reference solvent, the other with a dilute solution of the sample in that solvent (diagram).

The two thermistors are suspended in a closed, carefully insulated chamber, saturated with the vapor of the solvent used for the test. They are connected to a balanced electrical bridge.

When pure solvent is dropped on one thermistor and the dilute solution on the other, more vapor condenses on the sample thermistor than on the reference bead, giving up heat and changing the resistance. This disturbs the equilibrium of the electrical system, and a compensating resistance has to be introduced into the bridge to reestablish its balance.

That resistance is checked against a calibration curve—prepared with solutions of known composition—and the concentration of the sample can be read on that curve.

The Osmometer gives the molar concentration of the sample, hence its molecular weight. It's a micro-technique, in which 0.1 cc of 0.01-molar solution is sufficient.

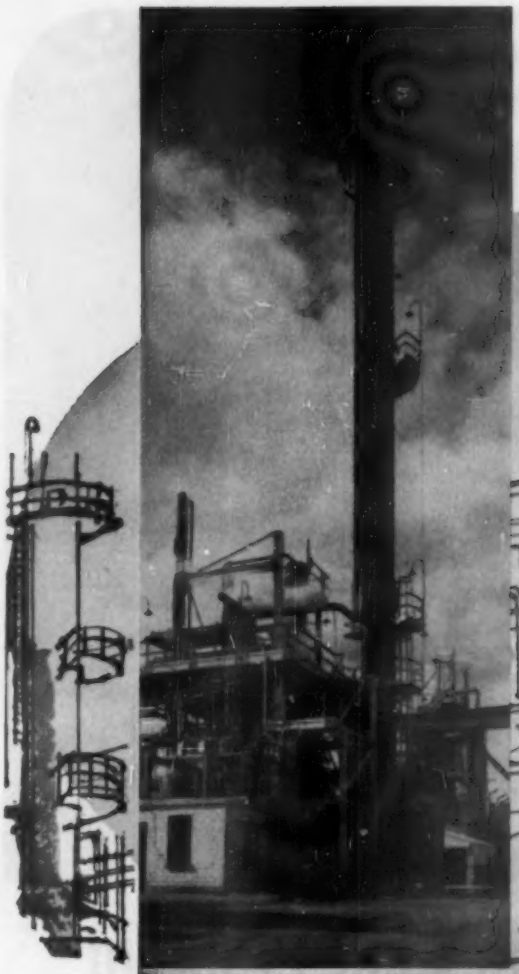


1. Syringe drops pure reference solvent on this thermistor
2. Another syringe drops dilute solution of sample on this thermistor
3. Change in resistance at this electrical bridge indicates molecular weight

Molecular weights up to 20,000 can be measured with 90% accuracy, and molecular weights to 5,000 with a 99% accuracy, Mechrolab says.

The apparatus is so sensitive that it can also be used to get a quick check on solvent purity, a useful feature in a refinery.

The insulated test chamber and the electrical bridge are mounted together. There are six syringes arranged in a circle to drop reference solvent and several consecutive sample solutions on the thermistors, without having to open the chamber.



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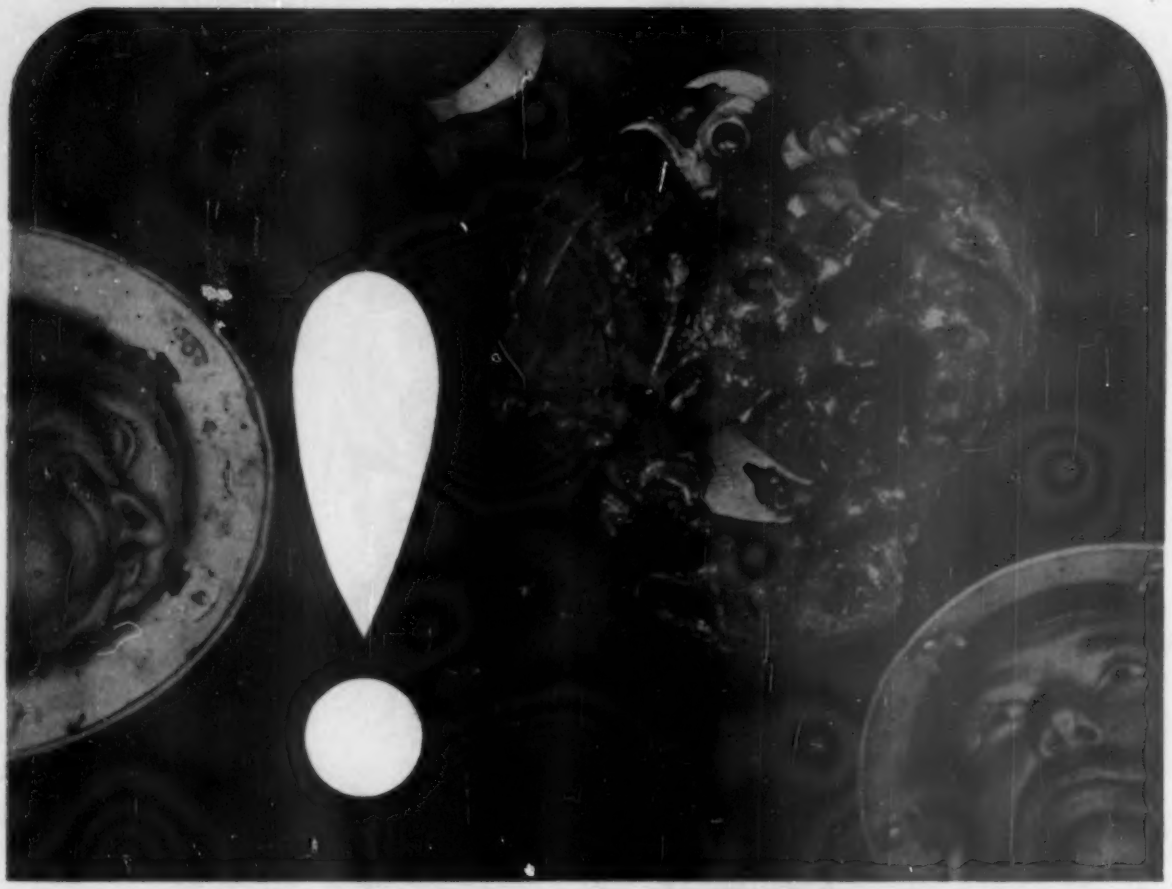

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What's New
IN PROCESSING

An automatic gasoline blender controlled completely by an electronic system has been put on stream at the Santa Fe Springs (Calif.) refinery of Wilshire Oil Co.

It is believed to be the first such installation in actual operation, says Mark E. Houser, Wilshire's vice-president of manufacturing.

The meters, control valves, and electronic components of the Wilshire blender were designed and furnished by Proportioneers, a division of B-I-F Industries. The plant was installed by C. F. Braun & Co.

•

Arkansas Chemicals, Inc., a newly formed joint subsidiary of Houston Chemical Corp. and Great Lakes Chemical Corp., will build a plant to extract bromine from oil field brine. It is expected to be on stream early next year, at El Dorado, Ark.

Houston Chemical will use a substantial portion of the bromine for conversion to ethylene dibromide, a component in tetraethyl and tetramethyl lead, which the company will begin to produce next fall.

Great Lakes Chemical, producer of bromine and bromine compounds, will use the balance of the production.

•

Polyethylene and styrene-base plastics buoyed up 1960 plastics sales to match the record year 1959, E. E. Winne, vice-president of W. R. Grace & Co., reports in a year-end summary on plastics.

Industry sales are expected to reach 5.6-billion lb. by the end of the year, he says, despite dips in phenolics and melamine.

•

Engineering

A mobile data-acquisition and computing system for monitoring process performance is being manufactured for Shell Chemical Co., Houston, by Packard Bell Computer Corp. It will be installed in a van for use at various plant locations.

The system accepts analog data from up to 60 sources, and converts it to digital form for computation by a Bell PB 250 computer. Results are recorded on magnetic tape.

The PB 250 can be operated with a battery where no a.c. power is available.

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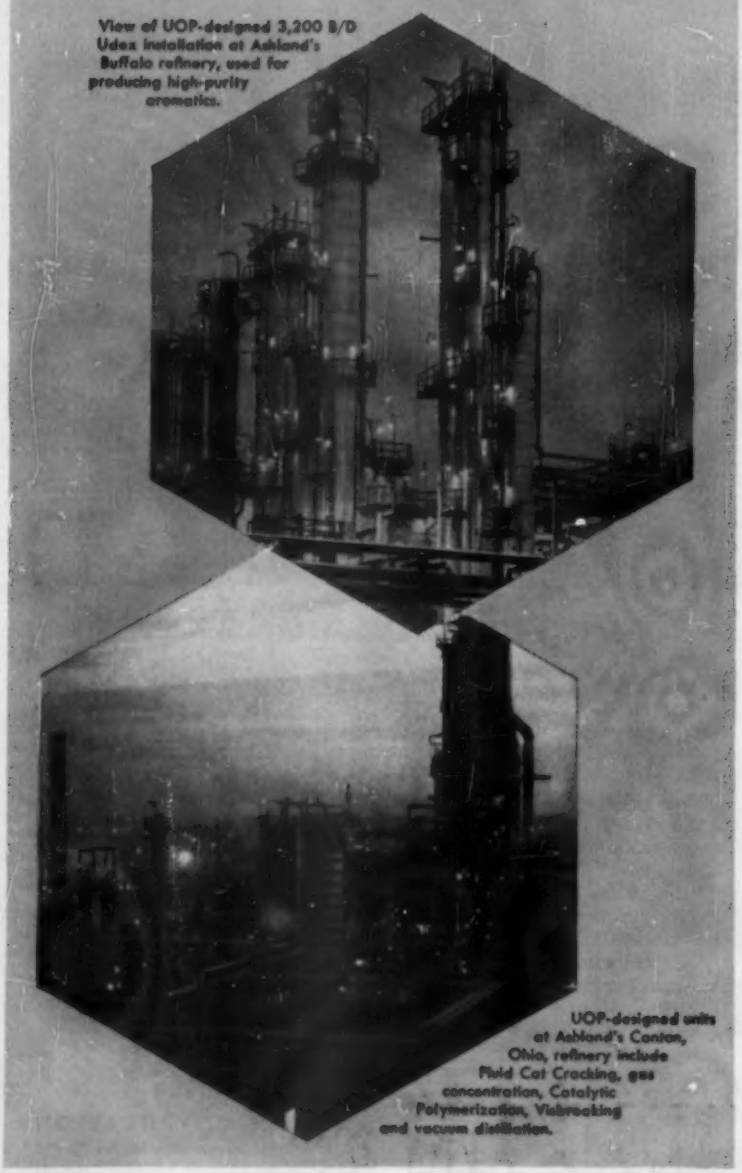
Udex® installation plays major role in Ashland's petrochemicals expansion program



View of UOP-designed 3,200 B/D Udex installation at Ashland's Buffalo refinery, used for producing high-purity aromatics.

UOP-designed units at Ashland's Canton, Ohio, refinery include Fluid Cat Cracking, gas concentration, Catalytic Polymerization, Visbreaking and vacuum distillation.

UOP processes contribute to Ashland's remarkable 36-year growth

By Robert E. Yancey,
Administrative Vice President
Ashland Oil & Refining Company
Ashland, Kentucky

R. E. Yancey

From a small 1,000 B/D skimming plant consisting of four shell stills in 1924, Ashland has grown to an operation utilizing six refineries with a total daily throughput in excess of 150,000 barrels of crude oil and an annual sales volume of $300,000,000.

Ashland serves the Ohio Valley and Great Lakes area through an efficient transportation network of crude oil lines, refined product lines, river towboats and barges, lake tankers, and trucks . . . Ashland branded products are sold through 3,500 service station outlets, and unbranded products through more than 1,000 independent distributors.

Udex, Hydeal®, and Naphthas Fractionating units provide expanded production of petrochemicals, jet and missile fuels

Our latest important expansion has taken place in the area of petrochemicals and other specialty products, such as aliphatic and aromatic solvents, special jet and missile fuels. Under this program a 3,200 B/D Udex unit for production of high-purity aromatics was placed on stream in May, 1958, at our Buffalo (N. Y.) refinery. Another UOP unit, now under construction at our Catlettsburg (Ky.) refinery will be the first commercial Hydeal process unit in operation for the production of benzene and naphthalene. Developed jointly by Ashland and Universal, this hydrodealkylation process will be used to produce benzene and naphthalene from low value heavy aromatics and alkylnaphthalenes. Benzene and naphthalene from the Udex and Hydeal units have numerous markets in the area of synthetic fibers, synthetic rubber, plastics, paints and other related fields.

Sales of petrochemicals and specialty products jump 44% in one year

Ashland's big push into the field of petrochemicals and specialty products proved extremely successful in 1959. Sales in these two areas jumped 44% in dollar volume over the previous year.

The importance of this new field of expansion was aptly phrased by Rexford S. Blazer, chairman of the board. "These sales . . . are highly profitable and demonstrate the value of the program of manufacturing diversification which the company will continue to expand. We place great emphasis on the production of tailor-made products for specialized uses throughout the great industrial area which can be served economically from our refineries and terminals."

Early facilities included Butane Isomerization and 'HF' Alkylation

Ashland's widespread activities are directed from the company's general headquarters located at Ashland, Kentucky, in the tri-state West Virginia-Ohio-Kentucky area. Catlettsburg, near Ashland, has been the site of Ashland's main refinery since the company's birth in 1924. The present corporation was formed in 1936 with the consolidation of Swiss Oil Corporation and Ashland Refining Company.

As sales increased, new units were added at Catlettsburg, many of UOP design. These included bubble tower fractionation (1925), an early single-coil Thermal Cracking unit (1926) later converted to two-coil, one of the first Catalytic Polymerization units for converting olefinic gases into high-octane gasoline, a combination crude atmospheric and vacuum distillation unit for the manufacture of asphalt and cylinder stocks (1938), a Butane Isomerization-'HF' Alkylation plant and catalytic cracking unit constructed during World War II for the production of aviation gasoline, and a 30,000 B/D fresh feed UOP Fluid Catalytic Cracking unit with gas concentration facilities added in 1956. Additional crude processing facilities were added in 1956 to increase the crude throughput to 80,000 B/D.

Company acquisitions add more process facilities and marketing outlets

Over the years, through the additions of various companies, Ashland now manufactures and markets a great variety of petroleum specialty products, many of which are sold in foreign markets. UOP processes and engineering services have been utilized extensively and to good advantage in all of our refineries. The Canton refinery, which has a crude capacity of 35,000 B/D utilizes many UOP-designed units, including Fluid Catalytic Cracking, gas concentration, Catalytic Polymerization, a Thermal Cracking unit later converted to Visbreaking, and a new vacuum distillation unit for the manufacture of asphalt.

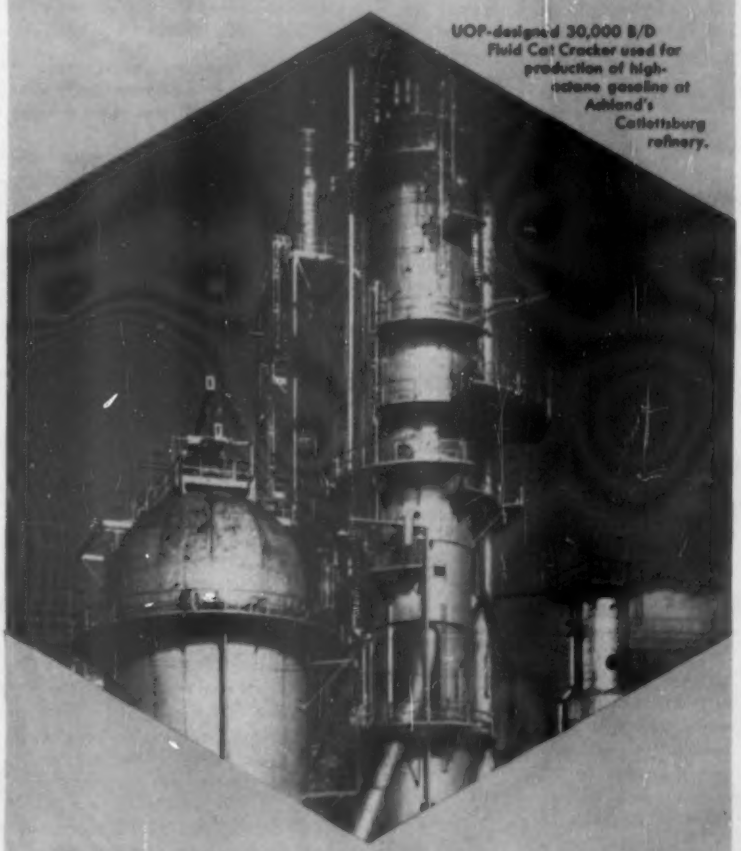
The Frontier refinery in Buffalo, N. Y., having a capacity of 32,000 B/D, is the site of Ashland's Udex installation which is an important cog in the company's petrochemical expansion program. A Hydeal unit is planned for this refinery. Additional UOP units at Frontier include Fluid Catalytic Cracking, gas concentration and polymerization. The addition of Frontier also provided Ashland with a number of valuable service station outlets and an extensive domestic fuel oil business. Asphalt is produced at Frontier as well as all of our refineries except the Valvoline plant, located at Freedom, Pa., which is primarily a lubricating oil refinery.

The purchase of R. J. Brown Company in 1956, and the Ohio-Indiana Division of Anderson-Prichard Oil Company in 1958, further strengthened Ashland's position as a refiner and marketer of industrial naphthas, solvents and petrochemicals. These two companies, along with the National Accounts Sales Department, market specialty products from our Udex and the new 8,400 B/D superfractionation units.

In November, 1959, Ashland obtained the modern refining facilities of the Louisville Refining Company, a large portion of whose processing installations were designed by UOP. Some of the more recent of these include facilities for the manufacture of asphalt, Fluid Catalytic Cracking, Unifining*, Platforming* and Merox*.

All of the six refineries now operated by Ashland have, at one time or another, installed units designed by UOP in cooperation with Ashland's engineering department. Practically all of our current expenditures are for facilities to make additional grades of profitable petroleum specialties, to upgrade the value of products from a barrel of crude oil, and to provide for more efficient and lower cost operations.

30,000 barrel-per-day Fluid Cat Cracker is a key process at Ashland's main refinery



UOP-designed 30,000 B/D Fluid Cat Cracker used for production of high-octane gasoline at Ashland's Catlettsburg refinery.

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Right-of-Way Service Business Bustling

- **Several major pipeline companies report they are turning to outside experts to do route studies and right-of-way acquisition.**
- **Main reason is that a slowdown in building is forcing them to trim their own ROW departments.**

The farming out of right-of-way acquisition and related services to professionals is shaping up as a trend in the pipeline industry.

A PETROLEUM WEEK survey shows that more than half of the large crude transportation companies, and many of the natural gas and products carriers, have contracted for some sort of right-of-way service in the past several months. Other firms indicate that only lack of new projects has prevented their doing so.

An official of one large company observes: "Right-of-way acquisition by contract will continue to gain favor, with both small and large firms, as the companies seek means to cut costs."

Another says, "Although we still prefer to do our own engineering and design, and so do not favor turnkey contracting, right-of-way acquisition appears to be an area in which the contractor can do the job as well as our own people, and in many instances more cheaply."

There are five or six right-of-way (ROW) service firms in the country.

Roughly, there are two main aspects to right-of-way work. One involves making engineering studies. The other concerns the acquisition of right-of-way property and has a strong public relations flavor.

For the past ten or 15 years, there has been a growing tendency on the part of pipeline companies, particularly smaller ones, to call in consultants on construction projects. As a result, several firms engaged primarily in engineering services have cropped up in various parts of the country.

Most of these firms offer acquisition services, but still only as an adjunct to their other functions.

Some companies have become specialists in performing the tasks involved in the acquisition of right-of-way.

A slackening in the rate of growth for pipelines—especially among crude carriers—appears to be the strongest force behind the trend.

The same company, which a few years ago might have constructed one or possibly two major and several smaller projects a year, now adds only an occasional extension or gathering line to its system.

While two sizable LP-gas pipelines are planned for next year, no major crude line building is proposed (PW —Dec.16'60,p50).

Some pipeline companies have found that it is economically unsound to maintain full-time right-of-way departments.

In past years, all major pipeline companies maintained their own right-of-way section. During the postwar boom years, many of these ROW departments became quite extensive as companies often kept several projects going simultaneously.

They're being slimmed down today, however.

The general manager of one large crude pipeline company reports: "Since our company has not in recent months had sufficient need for their services, many of our right-of-way people have been diverted to more productive work.

"As these people cannot, in most instances, be pulled away from their new duties when right-of-way work is required, we are turning to the service companies to supply personnel on a short-term basis."

Another compelling reason that pipeline companies are contracting for less expensive, outside service is spiraling easement costs.

One expert says that prior to World War II, easement costs were generally 1% to 2% of the total cost of a major pipeline project, with damage claims taking an additional .05%, while today ROW costs can run as high as 25% to 30% of total costs.

"Several factors have been responsible," he adds. "Among these are increased urbanization, high ROW prices paid for toll roads constructed under political auspices, and the increasing tendency to acquire easements through condemnation proceedings rather than by negotiation."

Mobility and speed are key assets in right-of-way acquisition work.

An official of one right-of-way acquisition company says that when he approaches a pipeline company, one of his main selling points is that his firm is "a mobile organization." By this, he says, he means that his company "can become an integral part of the pipeline company for as long as it is needed . . . get the work done . . ." and then move out.

Right-of-way firms generally perform several distinct services, which are available singly or together on a contract basis.

Here is a breakdown of services offered by one company:

- Selection of the most feasible route for a pipeline, plus one or more alternates, using aerial photos and ground reconnaissance surveys; then, projection of the routes on a base map for approval of one of them by the client.
- Searching of titles to obtain ownership information for the base map.
- Preparation of legal instruments and procurement of easements from property owners, and permits for road, railroad, and canal crossings.
- Institution of condemnation proceedings, when required.
- Establishment of liaison between construction crews and property owners to smooth misunderstandings during work.
- Adjustment of claims of landowners of damage to their property.

ROW firms consider their dealings with property owners to be the most critical phase of their work—and also the most time-consuming.

The service company, in effect, is supposed to act as a buffer between the pipeline firm and the landowner.

"Pipelines must be good neighbors to every landowner along their route," says a spokesman. "The companies realize they are going to have to live with the tenants for a long time to come. It's important to remember that the tenant's first—and possibly lasting —impression of a company comes from the right-of-way contact man."

ROW services are offered on practically any basis a pipeline company wants.

The most common form of contract

calls for payment to the service company on the basis of ROW acquisition costs (consisting primarily of disbursements for easements), plus a stipulated percentage of these costs.

A similar, though less used, contract is one that provides for the payment of costs plus production, production being paid on the basis of so many cents per rod (16½ft.) or ROW acquired.

Another type of contract in use provides for assignment of personnel on a per-diem basis, while yet another stipulates for a flat per-rod delivered price, which includes all costs incurred by the contractor.

Still another kind of contract is based on a flat cost of service, plus disbursement costs borne by the pipeline company itself.

What's New / IN PIPELINES, TANKERS, STORAGE

Continental Oil Co. has completed a 65-mi. gas pipeline from the Maurice-Milton area of Louisiana to its natural gasoline plant near Lake Charles.

The company has also built an 8-mi. line from the plant to its Lake Charles refinery.

The longer line, which is 16 in. in diameter, has a capacity of 200-million cf/d, while the shorter one, which is 24 in., has a capacity of 300-million cf/d.

Cost of the lines was $4.5-million.

The company is currently completing enlargement of the gasoline plant to hike its capacity by 50-million cf/d, at a cost of $2-million.

Crude from North Dakota's Newburg, Wiley, and Glenburn fields is now moving through the Great Northern Ry.'s new pipeline to Minot for trans-shipment by rail.

The 10-in. and 6-in. line, plus three pump stations and terminal facilities, cost $1.7-million.

Great Northern plans to extend the line northwest 64 mi. to the Lignite field next year (PW—Aug.12'60,p51).

•

Colorado Interstate Gas Co. has put in operation a new compressor station at Rawlins, Wyo., which has boosted capacity of its Wyoming pipeline from 138-million cf/d to 188-million cf/d.

The 4,500-hp. station is part of a $91-million expansion program, which will enable Colorado Interstate to supply gas to El Paso Natural Gas Co. at Provo, Utah (PW—Jun.24'60,p98).

At present, El Paso is supplying Colorado Interstate with gas at Provo for delivery to the Denver area. Upon completion of the program, gas flow will be reversed.

•

Construction started last week on the U.S. portion of the 1,400-mi. natural gas pipeline from Alberta field to San Francisco (PW—Oct.14'60, p56).

First pipe was laid on the Oregon-California border, near Malin, Ore.

H. C. Price Co. is building the California section, and Western Pipeline, Inc., and J. P. Neill & Co. are building the Oregon section as a joint venture.

•

United Gas Pipe Line Co., now collecting on six rate hikes subject to refund, has asked FPC approval of a seventh increase.

The latest rate boost would cost users in Arkansas, Florida, Louisiana, Mississippi, and Texas $4.9-million, and would become effective Jan. 15.

The company says the increase is necessary mainly because of higher gas costs.

•

Lone Star Steel Co. says it has received its first European order for steel for pipelines.

The order, which the company describes as "substantial," has necessitated putting back into operation two open-hearth furnaces and rolling mills at its plant near Daingerfield, East Texas. These facilities had been idle for lack of business.

The company calls the sale "a major breakthrough for us in the European market."

Lift Keeps Hoses from Getting Lost

This hose-hoister, with 12-in. hoses, makes it possible for the 40,000-ton Stanvac Horizon to unload the first cargo of crude in Manila Bay for New Bataan refinery of Standard-Vacuum Oil Co. There are 30 ft. of ooze on the bay floor, which make it impossible to use sunken flexible hoses from shore tanks; they "would just disappear," the company says.

The hoist, which is actually a trussed 100-ft. boom hinged to a submerged platform, is raised by pumping air into attached tanks, and lowered by releasing the air.

Europe Weighs Proration Countermoves

(A Report from PETROLEUM WEEK's London Bureau)

LONDON—Proposals for world oil production controls to hold or push up prices have prompted oil men here to give some new thought to the future of Middle East oil in Europe's energy picture.

Not that many here think there is any immediate chance that the Organization of Petroleum Exporting Countries (OPEC) will agree on a workable prorationing scheme.

But the very fact that "prorationing" of output is being discussed by Middle East producing states and Venezuela can have economic consequences that require new emphasis in the thinking of the governments of consumer nations, and precautionary measures by oil companies.

Oil men are also consoled with the thought that the producing countries east of Suez would not benefit by pricing their oil out of their big market in Europe, where 64% of demand is met by Middle East oil.

An actual increase in Middle East prices could, first of all, spur a faster push toward development of new oil production outside of the Middle East.

Currently, Middle East crude reserves amount to about 61% of the world total. But the picture could change drastically in the next ten years if there were less incentive to develop new production there.

Oil men point to three such important new producing areas—Libya, Algeria, and Nigeria.

In Nigeria, for instance, it has been reported that the production target by 1970 is 200,000 b/d. There is also the possibility that this target could go up half again as much and be reached some years sooner.

As for Libya and Algeria, their ultimate potentials are far greater than Nigeria's. Algeria is expected to produce at least 340,000 b/d next year. Libyan oil is not yet going to market, but the two 30-in. pipeline projects now in the works there indicate producing firms have high hopes.

There is every indication, too, that investment in Algeria exploration and development could be dramatically increased if European governments gave France assurances of markets.

A big question mark is whether a rise in Middle East prices would lure more U.S. and Russian oil onto the European market. At present, the U.S. supplies approximately 3% of Europe's oil, as compared to 17% in 1930. But in recent years, the amount of U.S. crude finding its way here to Europe has increased slightly.

The price gap is wide, however—about $1 a bbl. between Texas crude and Middle East crude laid down in Europe.

So oilmen here are somewhat skeptical that a price hike of 70¢ a bbl. such as would be involved in a pricing formula proposed by Abdullah Tariki, Oil Minister of Saudi Arabia—would cause any major increase in U.S. deliveries.

Similar doubts are expressed here about Russian crude deliveries. There is a limit to the extent to which the Russians would go to hitch their production program to the chance of an additional price advantage over the Middle East, it is argued.

Another consequence of Middle East oil price hikes could be a reshuffling of the balance between energy sources in Europe.

Natural gas, coal, nuclear power, and hydroelectric power may possibly move ahead at the expense of oil if it becomes more expensive, but there are obstacles in all four cases.

Here's how London oil men see the situation:

- **Natural gas**—Big new sources of gas in the Sahara and Europe are crying out to be developed. There's no question, either, that gas will soon be able to command premium markets.

While transport and technical problems are hindering the full utilization of this source of energy, misgivings about Middle East oil could certainly speed up the pace at which it penetrates the European market.

- **Coal**—Oil experts are skeptical that coal could do much to take some oil markets, even if prices rose. But a crucial factor here is how much consumer governments would reorient their fuel policies if they become convinced that the days of cheap oil are numbered.

Already in the U.K., in the face of threatened oil price rises, there is increasing argument for tariff protection for the declining coal industry. This, it is said, would guarantee an adequate supply of low-cost fuel.

- **Nuclear energy**—Oil men feel that nuclear energy has little to gain from a price increase for oil over the next few years. Even when more competitive prices are achieved in Europe for this type of power, the electricity produced will still be too expensive.

- **Hydroelectric power**—It is conceded that consumption of water-produced electricity in Europe could certainly be extended if the incentive were there. But, oil men point out, in current economic terms the potential left to bring into use is not very great.

Also, most hydroelectric sources in Europe are remote from the markets they can serve.

Prices Debated in Venezuela As Oil Policy Revision Is Urged

CARACAS—The Oil Ministry and Venezuela's oil industry began locking horns publicly on the question of crude sales prices and government revenues last week.

In one move, Oil Minister Juan Perez Alfonzo challenged oil companies to provide concrete information on how the government could get more revenue if they sold more oil, at lower prices.

They would have to explain, he said—in interviews published in Caracas newspapers—how they could guarantee that those lower prices would not affect prices of the rest of Venezuela's oil production.

In reply to the Oil Minister's challenge, a director of the Oil Industry Chamber said oil companies in Venezuela could sell up to another 200,000 b/d of crude—if they were allowed to give special discounts.

The official, unnamed, was quoted in the Caracas newspaper "El Universal" as saying that the proposed discount sales would not affect prices for the rest of Venezuela's production.

The sales, he said, would increase government revenue by more than $100-million annually, since the extra crude would be produced at low

cost, from present surplus producing capacity.

The Minister, however, had another question: What would the same companies do with the additional—and lower-cost—surplus capacity they also have in the Persian Gulf?

Oil Minister Perez Alfonzo said the government hopes that concrete measures for increasing revenues of all oil exporting countries will be considered at the Jan. 15 meeting in Caracas of OPEC, the Organization of Petroleum Exporting Countries.

The government, he said, feels it should seek higher revenue through an increase in oil prices, rather than through a struggle for markets.

These statements follow release last week of the National Economy Council's sharply critical analysis of present over-all oil policy, and its recommendations for a series of revisions to stimulate the industry and the economy (PW—Dec.23'60,p13).

Views of the official economic advisory body were presented in an 18-page economic analysis. Included was a five-page section on the oil industry's situation, based on a reply made to a questionnaire the council had formally presented to the Oil Industry Chamber (PW—Dec.9'60,p35).

The council, citing the "realities of the market," rapped official limitations on production, for one thing.

"The official thesis of selecting percentages for production growth," it said, "has the grave defect of fixing the level of activity of our chief industry on the basis of a principle completely divorced from realities of the market."

It further criticized the official price-control policy for its "restrictive" effect on production.

"It need not be feared that fiscal revenue would be affected unfavorably by expanded production," the economic advisory body said. A "prudent" increase would be derived from existing excess capacity, and this additional volume could be marketed "at very low cost," it added.

Official policy, the council said, is marked by a "lack of aggressiveness" in marketing Venezuelan oil.

"Failure to sell oil that can be produced at minimum cost implies an unnecessary loss of revenue, since the added unit profit from this output is much higher."

The council urged "greater efforts toward the discovery and delineation of new reservoirs"—instead of a conservation policy that restricts use of hydrocarbons.

Need for Exploration Incentives Shown

Incentives to restimulate sharply reduced exploration in Venezuela are a prime aim of the oil policy revisions the National Economy Council recommended.

Its analysis shows:

- Acreage held under concession has dropped to the lowest point "in at least 25 years"—to only 12,047,000 acres at the end of November.
- Surface exploration has dropped to 10% of the average level of the previous eight years. Only two geological crews are active currently, and no geophysical crews.
- Exploratory drilling has dropped to about 33% of the average of the past eight years.

"Venezuela's loss of position as an oil producing country will benefit neither the Venezuelans of today nor future generations—but other producing countries with a better oriented government policy," the council said.

The "virtual disappearance" of surface exploration is due mainly to the policy of granting no more concessions, the council said.

This, added to the assignment of a considerable area in Lake Maracaibo to the new national oil company—has had an "adverse psychological effect" on the industry, the council said.

The council sees the "legitimate commercial activity" of oil companies in Venezuela as being restricted—by present oil policy, plus high costs due to expensive labor, and a heavy tax burden.

It cites these factors—along with "uncertainty with respect to the country's petroleum future"—as affecting exploratory drilling and future investment programs.

The council proposed income tax reform as one measure to relieve this "somber panorama."

Tax proposals now pending before the Venezuelan Congress would be of little benefit to the industry, the council said. It urged liberalization of the proposed deduction limit of 1% for expenses incurred outside of Venezuela, as well as greater incentives, which are limited solely to exploration in the present draft bill.

Further, the council warned of "risk" in Venezuela's participation in OPEC, which it said "must be viewed with justified distrust on the part of consuming countries."

"It would be premature to judge the possible consequences of the agreement signed," it said. "Nevertheless, it is obvious that solely with the application of the basic principles already known, the oil market would be converted into an operation less and less oriented by the strictly commercial criteria of proven efficiency, which have been employed up to the present."

Australia, 1960: 20 Holes, No Oil

MELBOURNE—Oil companies drilled 20 tests in Australia in 1960, with little to show for their efforts but red ink on their account books.

Drilling is continuing in seven additional tests. So far, the only 1960 results of any interest were gas shows reported in the Roma District of Queensland.

However, there were reports last week that Union Oil Co. of California may have made a gas discovery on a Queensland concession it holds with Kern County Land Co., Los Angeles, and Australian Oil & Gas, Ltd.

Despite the lack of success, exploration is being intensified. At least eight new tests are to be spudded in the next few months.

More attention is also being given to preliminary exploration. At present, 12 seismic crews are operating in the subcontinent.

Another indication of the interest in Australian exploration was the recent acquisition of an additional 6-million Queensland acres by the Conorada companies, from Cordillera Mining Co., Dallas.

The signing of the agreement between Cordillera and the Australian subsidiaries of Continental, Ohio Oil, and Amerada was announced recently by Cordillera.

The Conorada companies hold rights to another 5.3-million acres in Queensland, which they acquired last year.

The three Conorada parents will pay Cordillera an unspecified cash price as reimbursement for acquisition costs and exploration expenses to date.

What's New / AROUND THE WORLD

Tariki Named First Saudi Oil Minister

SAUDI ARABIA—Abdullah Tariki last week was named Saudi Arabia's first Oil Minister by King Saud.

The King, taking over the reins of government from the premier, Crown Prince Feisal, raised the Dept. of Petroleum & Mining Affairs to ministry status. Tariki headed the department as Oil Director.

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MOROCCO—Pan American International has been awarded a six-month permit for exploratory studies in northwestern Morocco. The permit covers about 2,700 sq.mi. from Tangier to El Ksar and El Kbir.

Meanwhile, the government's mining research agency is looking for an associate for exploration of the 6,700-sq.mi. Draa River Valley concession that it holds, adjoining the Italian ENI's Tarfaya tract in the south.

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ALGERIA—Construction of a 50,000 b/d refinery near Algiers will begin early next spring with completion set for some time in 1962.

The plant will cost between $30-million and $40-million. It will be built by Soc. de la Raffinerie d'Alger, in which eight firms have interests—Cie. Francaise des Petroles and an affiliate (32%), Shell (18%), Esso (17.6%), British Petroleum (10.4%), SN Repal (10%), Mobil (6%), and Beryl (6%).

The refinery will be able to handle sweet Middle East and Venezuela crudes as well as the lighter Sahara oil.

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SAUDI ARABIA—Aramco announced last week it was suspending offshore drilling in its Safaniya field until a sunken drilling barge is salvaged or replaced.

The barge, Queen Mary, sank in 45 ft. of water during a storm as it was being rigged to drill No. 39 Safaniya in the Persian Gulf.

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USSR—The Soviet Union's oil production target for 1961 will be 164-million tons, an 11% gain over this year, according to the state budget report submitted to the Supreme Soviet in Moscow last week.

Though complete statistics were not

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given, this indicates that 1960 output —which the report said rose 18-million tons—will total about 148-million tons, or 14% over 1959.

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BOLIVIA—Bolivian Gulf Oil has confirmed its recent Caranda oil discovery with a stepout that looks like a better well than the first.

The No. 2, drilled about ½ mi. north of No. 1, yielded over 400 b/d in preliminary tests through ½-in. choke from about 6,200 ft. Like the No. 1, it will also be tested further up-hole. The No. 1 had initially flowed about 334 b/d of 50-gravity crude in tests at 5,850 ft. The site is 35 mi. northwest of Santa Cruz.

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VENEZUELA—Creole has brought in a substantial wildcat discovery in eastern Venezuela on the Mata fault trend, 6 mi. east of the Mata field. Tests of the No. 1 Acema yielded a total of 2,750 b/d of light crude from two zones—1,450 b/d at 12,200 ft., and 1,300 b/d at 12,500 ft. The well was carried to total depth of 13,300 ft. on Creole's Acema block in Monagas state.

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MOROCCO—Morocco may increase its imports of cut-rate Russian oil under a new trade agreement.

The agreement provides for imports up to 1,720 b/d, as compared to 1,200 b/d under a previous agreement. Morocco will get the crude at about 72¢ a bbl. less than it has been paying. Morocco also imports 660 b/d of crude from Venezuela.

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IRAN—The International Consortium reports it found no oil in its coastal wildcat at Kuh-I-Mund, where drilling was stopped at 13,541 ft. due to mechanical difficulties.

Though this was a record depth for Iran at the time, the Consortium has now passed it in No. 1 Suru, another coastal wildcat, near Bandar Abbas, in which drilling continues below 13,711 ft.

The previous depth record was set by National Iranian Oil Co.'s No. 7 Alborz, which was bottomed at 13,216 ft. in north-central Iran.

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VENEZUELA—Shell has now relinquished 34% of the total acreage it held in Venezuela in January, 1959, it announced last week. The latest: 188,000 development acres along the eastern Lake Maracaibo shore, where it had drilled 19 exploratory tests costing nearly $10-million.

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SAUDI ARABIA—Oil output held at a record level in November. The average was 1,325,445 b/d, down only 676 b/d from the October high. The 11-month average was 1,233,734 b/d, compared with 1,084,795 b/d last year. The month's refinery runs were at a new record of 252,814 b/d.

INDIA—The government has ordered more drilling rigs from the Russians at an estimated cost of $5-million to step up its own drilling program.

They are to be delivered by next March for use mostly in the area of the Cambay discovery, on the west coast.

Three of five Russian rigs previously ordered have been shipped to Ankleshwar, where a newer discovery is claimed.

The government also this year bought six trailer-mounted rigs in the U.S. (PW—Nov.11'60,p92).

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Indiana Standard Centralizes Credit

This week, Standard Oil Co. (Ind.) sets into motion the world's largest centralized credit-card system.

The move culminates a four-year effort by Standard to centralize its entire credit operation. Now, 2.5-million accounts located all over the country will be served through one office.

The credit handling, formerly accomplished separately by Standard itself and its domestic subsidiaries, American Oil Co. and Utah Oil Refining Co., will be brought together under one roof in the West Side of Chicago's Loop.

Some 550 employees, wading smoothly through an average of 50,000 checks a day, will mail out 50,000 statements, renew 15,000 credit cards, and write 1,500 letters a day.

If Standard were to continue this operation at the subsidiary level, it would require some 60 to 70 more employees. But through reorganization —which put all domestic marketing under American Oil—Standard was able to obtain significant cost savings —and not only in credit handling.

Besides the increased efficiency Standard gains from the move, this centralization step opens the door to a host of improvements in customer service.

L. G. Goodlander, who is credit manager for the company, puts it this way:

"Specialization is one of the most important advantages we derive through centralization. And through specialization, our customers receive better and more accurate service.

"For example, before I go home tonight, we'll have answered 95% of the inquiries we've received today from customers. The other 5% (which may require some research in our microfilm files) will be answered in three days.

"We've got 26 correspondents who do nothing but answer these inquiries," he says, "In a smaller operation, you couldn't attain that degree of specialization."

There's specialization in billing, too. "The tabulator operator has one job and only one job," says Goodlander, "and so does the control clerk. This affords a keenness of training that we didn't have before," he says.

In terms of billing time, this means that Standard will average 15 days between a sale at the pump and a bill in the mail to the motorist. Three or four years ago, this took 30 days.

MANAGEMENT OF THE ENTIRE OPERATION will be in the hands of L. G. Goodlander. He'll direct 55 employees (and handle 2.5-million accounts) in Chicago.

The way Standard will handle delinquent accounts demonstrates another advantage in centralization: Now the responsibility can be delegated to much lower levels of supervision.

In fact, even a clerk can handle a delinquent account. All an executive need see is a list of numbers that represent accounts 90 days overdue. From then on, a machine (especially designed by Automatic Writing Systems Co., Detroit) chooses the proper names and addresses, selects and types the correct form letters, and signs them in personalized fashion.

Here again, Goodlander says, "This would be too expensive at the regional level."

Another obvious advantage in centralization is the high degree of automatic operation that becomes feasible.

At present, Standard has an IBM Ramac 305 computer, which it uses to update customer balance cards each month. In addition, the Ramac's random memory feature searches out the 5,500 tax-exempt accounts (11,000 under consolidation) that Standard has, and prepares a list of these accounts that Standard can use in filing its own tax returns.

Before Ramac, all this had to be done manually.

As a "byproduct" of the over-all tabulating operation, Ramac can code certain accounts for Standard's trade relations people, who are interested in retaining a record of intracompany purchases.

Besides its present acceleration of data processing, Standard is in an excellent position to expedite its credit control by machine.

In shifting over to high-speed tape computers, Goodlander says that he would be able to spot misuse of credit thirty days sooner than he can now.

In other words, he would be able to update customer balances once every day—instead of once a month. If a motorist were suddenly to increase his use of credit, Goodlander would spot it as soon as he received the motorist's invoices.

But despite these benefits in centralization, there are certain characteristics of the credit operation that limit the degree of mechanization that is practicable.

As Goodlander says, "No machine will write a letter to a customer telling him we're sorry the dealer forgot to put his gas cap back on."

Similarly, there is more involved in billing than mailing a customer an itemized statement: Each individual ticket must be attached to the statement. "If your wife goes to the department store and buys a dress on credit," Goodlander quips, "you know she bought it because it's hanging in the closet. But when you buy gaso-

line," he says, "you only have a record of the purchase when you have a ticket to show for it." Some 6-million tickets will go through the centralized credit office each month.

The service station is perhaps the most difficult part of the credit operation to mechanize.

"Here we're at the mercy of the dealer," says Goodlander. "If he makes a mistake in filling out an invoice we may never be able to detect it."

This would be especially true, Goodlander feels, were the company to introduce ticket imprinters that print the amount of the sale in addition to code number, name, and address. "A slight slip with a wheel or a button on one of those machines and the dealer may have imprinted an error into the invoice," Goodlander notes. (Standard Oil Co. (Ohio) is currently testing one of these devices.)

To escape dealer error—and still introduce mechanization—Indiana Standard is looking at new equipment that combines ticket imprinting with the computer mechanism of the gasoline pump. The only obstacle here, Goodlander says, is the high cost of this equipment.

Even at the central office, there are tedious manual chores that resist replacement by machine.

The most obvious of these is manual key-punching. While a high-speed scanner will process 10,800 tickets an hour, the key-punch operator lopes along by comparison at 1,600 to 1,800 an hour. Even this is faster than Standard's noncentralized key-punching, which averaged 700 to 800 an hour.

Of course, the manual key-punching would be eliminated if Standard adopted amount-printing imprinters. The amount of each motorist's purchase is all the automatic scanning equipment overlooks.

But even automatic scanning could be eliminated if Standard adopted an imprinter that key-punched its own invoice. With such an imprinter, the company could send an invoice directly from the service station to the tabulator—skipping the scanning step entirely. (Standard is studying equipment that will make this possible.)

But here again, the oil marketer would place himself at the mercy of the dealer. Not only would the company be relying on the accuracy of the dealer in getting the amount right, but it would also depend upon him to produce a usable key-punched card.

Such demands may be too much to ask of the average dealer, especially when the new equipment could tend to increase imprinter rentals that dealers are required to pay.

Even today, 32% of Standard's stations have no imprinters at all. And even though these stations account for only 12% of the company's sales, they represent a gap in the modernized credit system. A hand written invoice will not be accepted by even the most modern of scanning equipment.

Pump Island Acts as Nerve Center

A pump island serves as the "nerve center" of this station, which was just opened by Esso Standard, Eastern Division of Humble Oil & Refining Co. in Richmond, Va.

Marketers have been interested in expanding their pump islands for years. But Esso has gone furthest, it seems, by turning the island into an "auxiliary sales room."

Esso has actually made the island completely self-sufficient, enabling the dealer to run the station even after the main building has been closed for the night.

The brightly-lit station (which has reminded one motorist of a night baseball stadium) is located adjacent to the Village Shopping Center.

It carries through the theme of shopping convenience, which has become paramount with shopping-center outlets, by featuring complete motor tune-up facilities and three lube bays. An expanded sales room includes a "fully equipped" customer lounge.

What's New
IN MARKETING

Motorists on the Airline Highway in Louisiana have apparently accepted the idea of having their clothes washed at a service station.

Ingram Oil Co., which offers a "Launderama" service at one of its stations there, reports that gasoline sales have increased since they started taking in wash. The laundry work is actually done by an individual who leases land from Ingram.

A. H. Mizell, III, president, says the company may be looking around for other stations to turn into part-time laundries.

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Several West Coast marketers have adopted wide-area pricing in the Puget Sound region of Washington, where it was introduced last May by Mobil Oil Co. (PW—Jun.3'60,p40).

Among the majors now pricing on a wide-area basis are Standard Oil Co. of California, Richfield Oil Corp. (L.A.), Texaco Inc., and Union Oil Co. of California.

Mobil originally started wide-area pricing in New England in October, 1959, and later extended it to New York.

Recently, Standard Oil Co. (Ind.) introduced its own wide-area plan in Kansas (PW—Dec.16'60,p14).

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State gasoline tax revenues continued to rise this year, despite the effects of compact cars.

The U.S. Dept. of Commerce expects that these revenues will hit $3,427,000,000 this year, compared to $3,254,000,000 last year. In 1958, the states took in $2,968,000,000.

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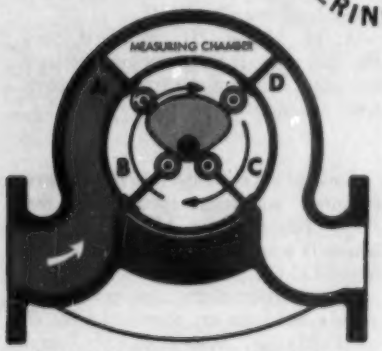
Shell Oil Co. has denied that it adheres to a one-cent differential (above private branders) in pricing its gasoline in California.

In a letter to the California Petroleum Marketers Council, Selwyn Eddy, Shell's West Coast marketing vice-president, writes that "our policy is simply to be competitive in pricing gasoline sold at our service stations."

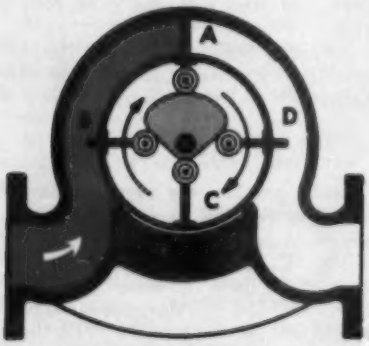
Earlier (PW—Dec.2'60,p67), CPMC had called Shell's pricing tactics "unjust" and prepared to complain to the Federal Trade Commission. But a waning of the "one-cent phenomenon" persuaded CPMC simply to appoint a committee to watch for a resurgence of the problem.

FOLLOW THE FLOW

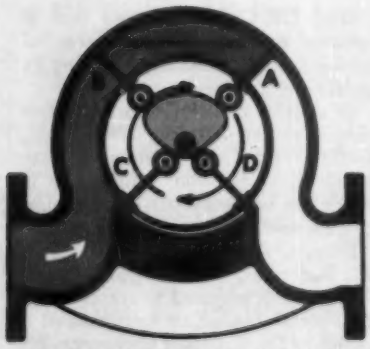
THAT LEADS TO ACCURATE, TROUBLE-FREE METERING



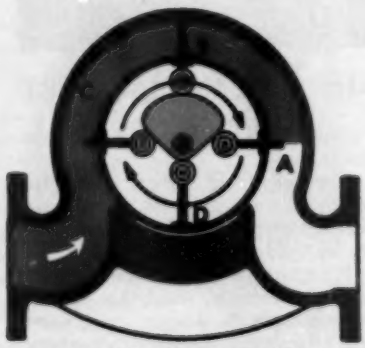
Unmeasured liquid (dark green) is shown entering meter. Rotor and vanes are turning clockwise. Vanes A and D are fully extended, forming the measuring chamber. Vanes B and C retracted.



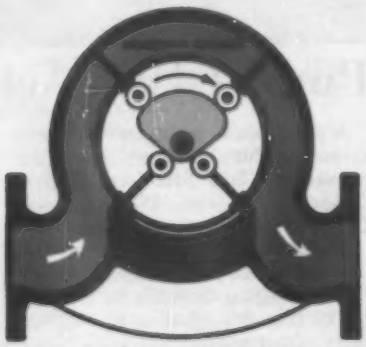
The rotor and vanes have made one-eighth revolution. Vane A is fully extended, Vane D is being drawn back, Vane C is fully recessed, Vane B is being extended.



A quarter revolution has been made. Vane A is still fully extended and Vane B is now fully moved out. An exact and known volume of new liquid is now in the measuring chamber.



One-eighth revolution later, the measured liquid is moving out. A second measuring chamber is beginning to form between Vanes C and B. Vane A is being drawn back.



In one-half revolution, two measuring chambers have formed and the third is in the process of forming. This cycle is repeated as long as liquid flows.

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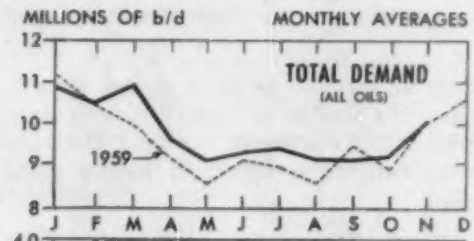
PETROLEUM WEEK'S

Fingertip Figures



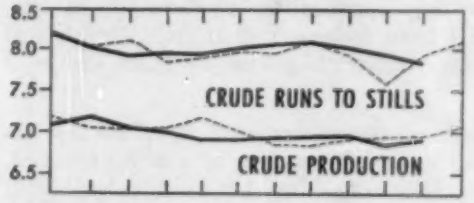
Figures for period ended Dec. 23, except as noted

TOTAL DEMAND

Latest 4-week average	*
Year ago	10.778

DISTILLATE DEMAND

Latest 4-week average	*
Year ago	3.029

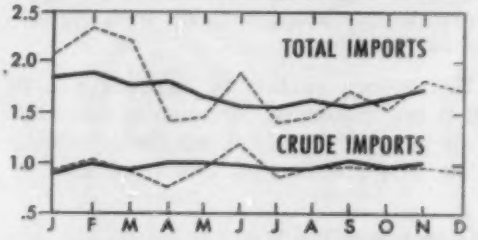


RUNS TO STILLS

Latest week	*
Previous week	7.927
Year ago	8.266

CRUDE PRODUCTION

Latest week	*
Previous week	7.132
Year ago	7.102

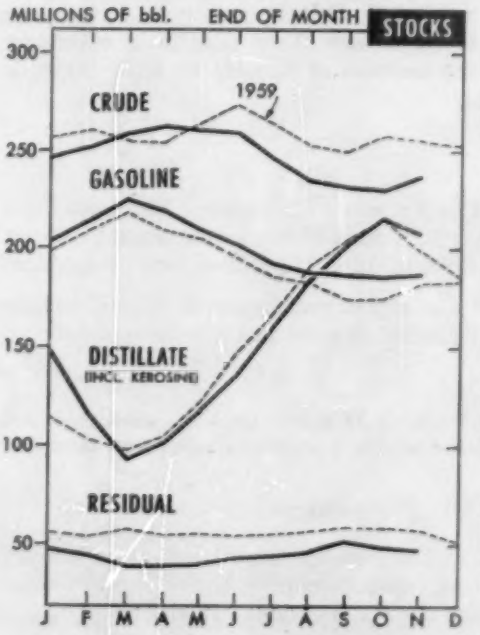


TOTAL IMPORTS

Latest week	*
Previous week	1.479
Year ago	1.738

CRUDE IMPORTS

Latest week	*
Previous week	.739
Year ago	.991



CRUDE STOCKS

Week-ended Dec. 17	236.9
Previous week	239.3
Year ago	256.4

GASOLINE

Latest week	*
Previous week	190.0
Year ago	184.0

DISTILLATES

Latest week	*
Previous week	194.1
Year ago	178.8

RESIDUAL

Latest week	*
Previous week	48.6
Year ago	50.8

Predictions are that the number of rotary rigs cutting hole in the U.S. in 1961 will rally slightly.

A compilation of estimates from a dozen oil companies and equipment firms indicates that an average of 1,745 rotary rigs will be active next year, up 0.6% from the average now anticipated for 1960. One individual estimate, however, has gone as high as 1,850 rotary rigs active.

The survey also shows that some 173 rigs may be operating in Western Canada next year. This compares with an average of 170 rotaries active in 1960.

The increase abroad is forecast to be more substantial. Estimates are that rotary rig activity in the Free World outside of the U.S. and Canada will perk up 3.6%, with 37 more rigs operating than in 1960.

The U.S. is still indisputably the center of world drilling activity. More than 58% of all rotary rigs operating in the Free World will be working within the nation's borders.

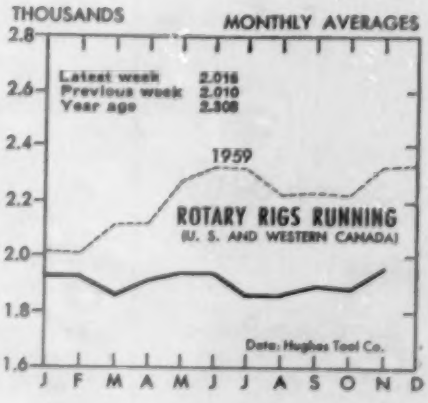
But the number of overseas rotaries active are not trailing U.S. totals by as much as some people think.

Out of a total of 2,975 rotaries forecast for the entire Free World, 1,057 will be working overseas, or more than 35%. Canada is expected to claim 5.8% of the total.

"Although the number of rigs operating abroad is not to be sneezed at," says one drilling and producing equipment executive, "for your real bread and butter, you still have to look to the U.S. market."

* * *

Due to the Christmas holiday, most figures for the week ended Dec. 23 were unavailable at press time.



The Market Trend

Commodities May Be a 'Required Course'

If you want to avoid an early retirement, why don't you bone up on the world markets for hides, tobacco, wool, or some such. You don't have to be a chemical engineer, and you might some day wind up with a classy job.

There's a very good reason for an oil man to be in charge of artichokes, or ouzo, or high-grown teas. It's Russia. In fact, it may be only through commodity deals that western oil companies can fight the Russians on even ground. One international major admits to having given "serious thought" to such a gambit.

When the Soviet first started its oil offensive, the reaction of western oil companies was to "move over." The theory was that Russian oil capabilities wouldn't cut much ice. Let them sell a little oil, the myth went on, and learn to drink Brazilian coffee.

But "moving over" gets very irksome when the Soviets are willing, on a large scale, to absorb one-crop commodities of have-not nations. You've seen it with fish products from Iceland, cotton from Egypt, and sugar from Cuba. You almost saw a repeat last week on hides and wool from Uruguay.

In any event, private western oil companies can't fight the Soviets on even terms, for the Soviet oil agency is an arm of the government. As one executive put it this week, "We're fighting them with only 25% of our strength." Fifty percent of cash accumulation, he adds, goes for U.S. taxes, and about 25% for dividends.

And the plot thickens if U.S. money outflow to have-not nations slackens—as it easily might. What are flutters of recession at home are financial crises in many nations abroad. And Russia stands ready to trade with sluggish economies for Indian jute, Italian pipe, Swedish timber, or whatever you want to name.

Government help may be the answer in the U.S. For Russia not only sells oil, but fosters ideas. Oil men admit that they may be forced into the general commodity business. Up to now, they add, their efforts to alert our State Department to the problem of Russian oil have drawn a blank.

Black Sea Oil For Egypt:

Russia got the lion's share of Egypt's crude oil business last week. The Soviet oil agency will sell 1½-million tons of Black Sea crude to Egypt in the coming year. Caltex got the balance, 1¼-million tons of Arabian.

Still to be awarded are Egypt's products requirements. These include 300,000 tons of kerosine, and 250,000 tons of gas oil.

Solvent Oil Up:

Prices for solvent refined lubes were up 1¢ a gal. on the Gulf Coast last week. Bright stock now is quoted at 27¢ a gal., and solvent neutral oils range from 23.5¢ to 25¢.

Firm Ship Rates:

Tanker rates are still holding at their recent highs, but some traders wonder if the prosperity can last. One sour note: Reduced import quotas on the U.S. West Coast will put quite a few ships "on the beach."

The Market Place

AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of December 24

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U.S. Gulf Coast, cargoes
- Gasoline, 98 oct prem 12.25-13.25
- Gasoline, 92 oct reg 11.25-11.5
- Kerosine 9.25-10
- Heating oil, No. 2 ..... 8.5-9
- **Gas oil, 48-52, d.i. ..... 8.75-9.25↑**
- **Fuel oil, bunker "C" ..... $2.30-2.40↑**

Caribbean, cargoes
- Avgas, Grade 100/130 ..... 14.75
- Gasoline, 93 oct research prem 11
- Gasoline, 87 oct research reg 10.125
- Gasoline, 80 oct research 9.375
- Gasoline, 70-72 oct motor method 9.25
- Kerosine 9.25
- Heating oil, No. 2 ..... 8.125
- Gas oil, 48-52 d.i. 8.375
- Fuel oil, bunker "C" $2.00

New York Harbor, barges
- **Kerosine ..... 10.4↑-10.65**
- **Heating oil, No. 2 ..... 9.4↑-9.65**
- Fuel oil, No. 6 ..... $2.62

Okla.-Group 3, northern shpt., bulk
- Gasoline, 91 oct reg 12.5-13.25
- Kerosine 11-11.125
- Heating oil, No. 2 ..... 9.5-9.75
- Fuel oil, No. 6 ..... $1.80-1.90

Chicago, bulk
- Gasoline, 92 oct reg 12.625
- Heating oil, No. 2 ..... 9.75-11.35
- Fuel oil, No. 6 high sulfur 7.65

Los Angeles, rack
- Gasoline, 88 oct reg 11-12.65
- Diesel fuel, PS 200 ..... 7.75-11.25
- Light fuel, PS 300 ..... $2.90
- Heavy fuel, PS 400 ..... $2.05-2.45

Natural Gasoline, Grade 26-70
- FOB Group 3 ..... 4.5
- FOB Breckenridge, Tex. 4

LP-Gas
- Propane, Oklahoma (Group 3) 4.5-5
- Propane, Baton Rouge 5.625

Pennsylvania Lubes
- Bright stock, 25 p.t. 25
- 200 vis. neutral, 25 p.t. 28

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i. 26-27
- Neutral, solvent, 200-210 vis. 23-24

Gulf Coast Lubes
- **Bright stock, solvent, 95 v.i. ..... 26-27↑**
- **Neutral, solvent, 200 vis. ..... 23-24↑**

Eastern Hemisphere

Singapore (Pulau Bukom) cargoes
- Avgas, grade 100/130 ..... 15.5
- **Gasoline, 79 oct research ..... 9↓**
- Kerosine 9.625
- **Gas oil, 48 d.i. minimum ..... 9↑**

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, (Okla.Kan.), 36.0-36.9 ..... $2.69-2.97
- North Dakota, 36.0-36.9 ..... 2.47-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9 ..... 3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9 ..... 2.92-3.22
  - West Texas, sweet, 36.0-36.9 ..... 3.00
  - West Texas, N.M., inter., 36.0-36.9 ..... 2.93
  - West Texas, N.M., sour, 32.0-32.9 ..... 2.71
  - East Texas, flat 3.05-3.25
  - Mirando, 28.0-28.9 ..... 2.96-3.31
- Illinois Basin, flat 3.00-3.05
- Pennsylvania Grade, Bradford dist., flat 4.80
- California, Signal Hill, 21.0-21.9 ..... 2.33†
- North Louisiana-Arkansas, 36.0-36.9 ..... 2.72-3.02
- Wyoming, sweet, 36.0-36.9 ..... 2.85-2.90
- Wyoming, sour, 32.0-32.9 ..... 2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.) $2.38
- Leduc-Woodbend (Alta.) 2.53
- Redwater (Alta.) 2.42
- Steelman A (Sask.) 2.425
- Virden (Man.) 2.285

Venezuela (Cargoes, FOB lifting port designated)
- San Joaquin, 41.0-41.9, Puerto la Cruz $3.10
- Oficina, 35.0-35.9, Puerto la Cruz 2.80
- Tia Juana, Medium, 26.0-26.9, Amuay 2.30
- Bachaquero, flat, La Salina 1.85
- Lagomar, 31-31.9, Cardon 2.55
- Lagunillas Heavy, flat, La Salina 2.07

†*Differential per deg. of grav. varies*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura $1.80
- Safaniya, 27.0-27.9, Ras Tanura 1.47
- Iran, 34.0-34.9, Bandar Mashur 1.78
- Iran, 34.0-34.9, Abadan 1.73
- Iraq, 35.0-35.9, Fao 1.72
- Kuwait, 31.0-31.9, Mina-al-Ahmadi 1.59
- Qatar, 41.0-41.9, Umm Said 1.95
- N. Zone, Burghan, 23.5-24.4, Mina Saud 1.48
- N. Zone, Ratawi, 23.5-24.4, Mina Saud 1.41
- N. Zone, Eocene, 16.5-17.4, Mina Saud 1.28

Middle East, Eastern Mediterranean
- Arabia, 34.0-34.9, Sidon $2.17
- Iraq, 36.0-36.9, Tripoli, Banias 2.21

North Africa, Phillipeville, Algeria
- Hassi Messaoud, 48 and above ..... Withdrawn

KEY TANKER RATES

(Last paid, per long ton, single voyage)

- **U.S. Gulf-New York, clean ..(USMC+20%) $3.42↓**
- **U.S. Gulf-New York, dirty .(USMC+7½%) $3.06↑**
- **NWI-USNH, dirty .....(USMC—7½%) $2.54↑**
- NWI-UK/Cont., dirty .....(Scale—30%) 22/11*
- Persian Gulf-UK/Cont., dirty ....(Scale—17½%) 46/7*
- **Persian Gulf-USNH, dirty (USMC—42½%) $6.84↑**

**Sterling*

MAYNARD P. VENEMA, president of Universal Oil Products Co., Des Plaines, Ill., has also been elected chairman and chief executive officer. He succeeds **David W. Harris**, who will continue to serve UOP as a director and as chairman of the finance committee. He will also act as special adviser to Venema.

M. P. Venema

F. L. Williams

FRANK L. WILLIAMS has been named vice-president and sales manager of Waukesha Sales & Service, Inc., Houston. Williams has been in the Waukesha sales organization for the past 14 years. The company is distributor for Waukesha, Climax, and Kohler engines throughout Texas, and in parts of Louisiana, New Mexico, and Arkansas.

DAVID M. JACKS and **THOMAS G. COCKS** are new vice-presidents of Nalco Chemical Co., with offices in Chicago. Both men will serve as executive liaison officers, with responsibility for coordinating the administration of several Nalco subsidiaries and divisions. Jacks, who has been with Nalco for the past 22 years, was most recently vice-president and general manager of Visco Products Co., the company's Texas subsidiary that manufactures oil production chemicals. **M. P. Hilbun**, formerly Mid-Continent division manager for Visco, succeeds Jacks as general manager. Cocks was formerly southeastern district manager for Nalco's industrial division, in Jacksonville, Fla.

THE PETROLEUM EQUIPMENT SUPPLIERS ASSN. has appointed four new directors and a Pacific district chairman. Three new directors from the Gulf Coast district are: **Paul F. Carmouche**, Murray-Brooks, Inc., Lake Charles, La.; **J. T. Kenneally**, Houston Oil Field Material Co., Houston; and **W. E. Scarborough**, Reed Roller Bit Co., Houston. **Elmer J. Weis**, Pacific Pumps, Inc., Huntington Park, Calif., is the director from the Pacific district. The new Pacific chairman is **H. H. Peters**, Technical Oil Tool Co., Los Angeles. He replaces **W. A. Wilson**, who has resigned as chairman and a director.

A. J. FOSTER has been appointed parts salesman and service supervisor for the Dallas-Midland district of Clark Bros. Co., one of the Dresser Industries. Foster, whose new offices are in Albuquerque, N. M., will supervise spare parts sales to the oil, gas, and petrochemical industries in West Texas, New Mexico, and portions of Arizona, Colorado, Wyoming, Idaho, and Utah. Foster, who joined the Clark organization in 1948, has worked in its service department at the plant at Olean, N. Y., and in various field assignments.

A. J. Foster

C. E. Macdonald

C. E. MACDONALD has joined Atlas Bradford Co., Houston ,as manager of the export department. He was most recently vice-president of Worldwide Supply Co., which is being dissolved. Macdonald has been involved in foreign oil activities since 1930, when he became associated with the W. R. Davis interests that built a refinery in Germany.

P. A. MEDCRAFT has been appointed general manager of BP Tanker Co., Ltd., London, principal shipping organization of British Petroleum Co. He succeeds **D. G. L. Bean**, who has been appointed general manager of the supply and development department of the parent company.

JOHN A. DAUGHERTY has joined Lucey Products Corp. as vice-president, with offices in Houston. He will be involved with the development of the company's production and drilling program in the Gulf Coast area. Daugherty began his career with National Supply Co. in 1920, where he remained until 1933 when he joined Mid-Continent Supply Co. He served as Mid-Continent's vice-president in Tulsa from 1935 to 1947, and after that transferred to Houston, and was elected a Mid-Continent director, his most recent position.

J. A. Daugherty

C. T. Owen

C. T. OWEN has been appointed division controller for the Supply Division of Jones & Laughlin Steel Corp., with offices in Tulsa. Owen, who has been assistant division controller, succeeds the late **R. D. Hilborn**. Owen has also served the J&L Supply Division as assistant chief accountant, clerk at the division's general offices, and storeman at Seminole, Okla.

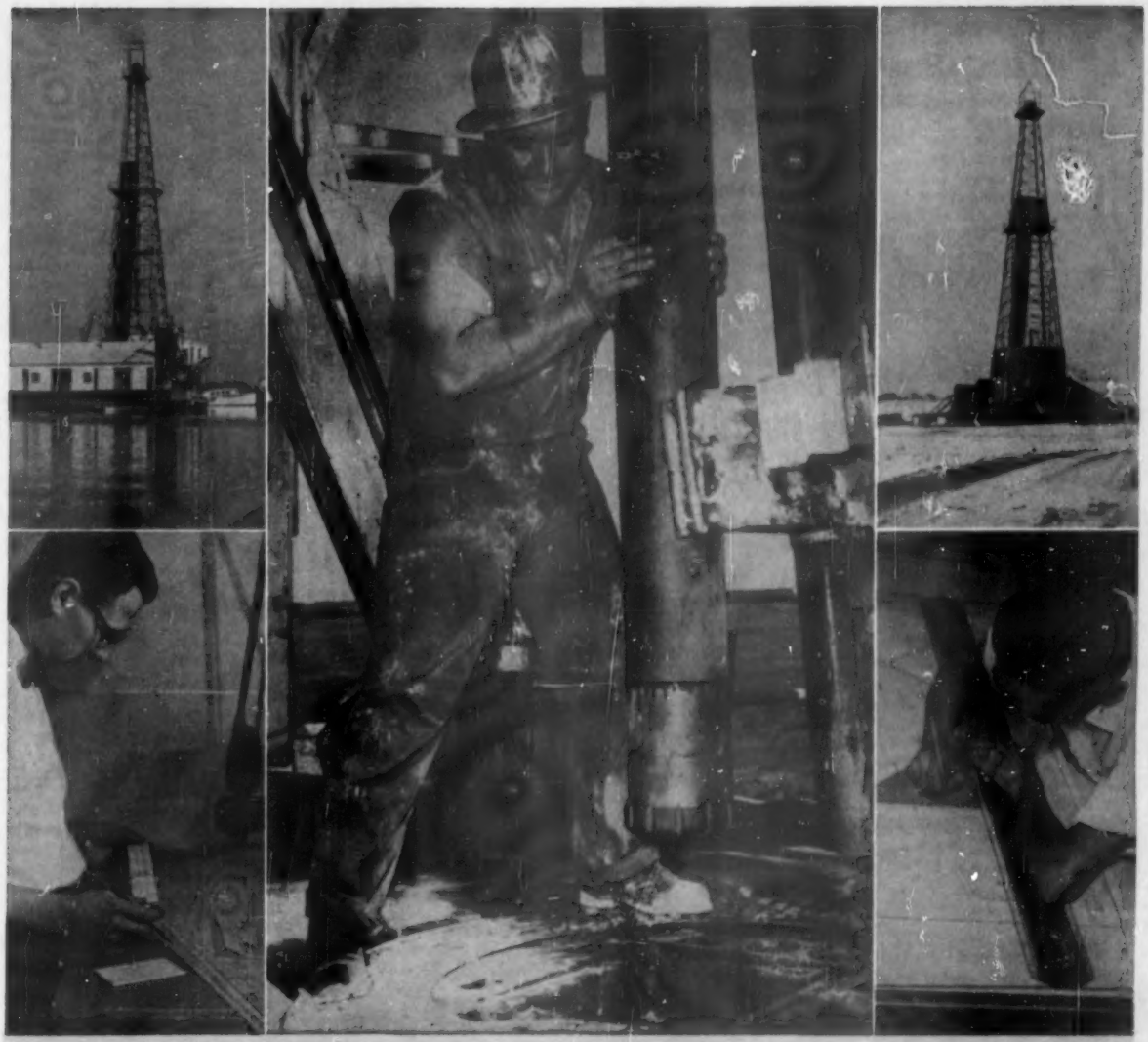
PAUL BARTLEY is the new sales vice-president of Black, Sivalls & Bryson, Inc., with offices in Oklahoma City. He will be in charge of the recently consolidated sales organizations of BS&B's oilfield equipment and controls divisions. Bartley, who has been with the company for the past 20 years, was recently manager of the oilfield equipment division at Oklahoma City. **James E. Byers** has been named manager of product sales, oilfield equipment, at Oklahoma City, and **Edward W. Reif** manager of product sales, controls, and specialty products. BS&B has also divided its marketing area into eight regional territories. Seven new regional managers are: **Floyd C. Myers**, vice-president, Gulf Coast region, Houston; **Lee Kelton**, southwest region, Dallas; **Ralph Stevens**, Mid-Continent region, Oklahoma City; **L. E. Jones**, Rocky Mountain region, Casper, Wyo., **Austin Lyon**, northeast region, New York; **James Lee**, north-central region, Carmi, Ill.; and **William E. Lacy**, western region, Los Angeles.

P. Bartley

S. A. Shuman

SIDNEY A. SHUMAN has been elected vice-president and general manager of Armco Steel Corp.'s new National Supply Division, which will replace National Supply Co., a subsidiary. Union Wire Rope Corp., another Armco subsidiary, has also been merged with the parent company. **James H. Hatch**, who has been general manager of Union Wire, continues in that capacity for the new Union Wire Rope Division. In his new position, Shuman succeeds **A. W. McKinney**, who recently retired as president of National Supply. Shuman, who joined the Fluid Packed Pump Division of National Supply in 1936, was named assistant to McKinney earlier this year. National Supply is located in Pittsburgh, and Union Wire Rope is in Kansas City, Mo.

JOHN F. ADAMS has been appointed merchandising supervisor of National Supply Co. of Venezuela, C.A., with headquarters in Caracas. Adams, who joined National Supply Co., Pittsburgh, in 1951, has held assignments for the company in Hobbs, N.M., and Ft. Worth. He transferred to Venezuela in 1958.



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Germany, Frankfurt/Main — S. Kimes, 85 Westendstrasse

Switzerland, Geneva — M. R. Zeynel, 2 Place du Port

R. L. Kidd

E. Heston

ROBERT L. KIDD has been elected chairman of Cities Service Oil Co., Bartlesville, Okla., and **EDGAR HESTON** succeeds him as president. Kidd, who has been president of the company since 1956, will continue as its chief executive officer. Heston became president of Arkansas Fuel Oil Corp., another of the Cities Service companies, with offices in Shreveport, La., in 1956. He will also continue in that capacity, but will move his headquarters to Bartlesville.

MARCUS A. MARKLEY and **ELMER R. BRADLEY** have been named general sales managers for Sun Oil Co., Philadelphia. Markley will be in charge of industrial, wholesale, fuel oil, and foreign sales, and the sale of LPG. Bradley will be responsible for the merchandising and sale of motor products, including automotive fuels, lubricants, and TBA, both directly and through wholesale distributors and commission agents. Markley has been an assistant general sales manager since 1955, and Bradley since May of this year.

J. A. CHAMPION is the new area geologist for Shell Oil Co.'s Houston area. He has been Shell's division geologist at Corpus Christi since 1955. Champion, who joined Shell as a geologist at Houston in 1947, was promoted to district geologist for the San Antonio district in 1952. He became senior geologist in Houston in 1954, and then spent six months on a special assignment, returning to his position in Houston early in 1955. Later that year he moved to his most recent position at Corpus Christi.

HULUSI BERILGEN has been appointed chief petroleum engineer for Mobil Exploration Mediterranean, an affiliate of Socony Mobil Oil Co., which is responsible for exploration in Turkey. Berilgen, who is a native of Turkey, has had two years experience in the oilfields of North America, and has worked in the Raman-Garzan fields and other parts of Turkey for 11 years.

ARTHUR S. DICKINSON has been named exploration geologist for Lion Oil Co., division of Monsanto Chemical Co., at Houston. He was formerly a geologist for Lion there.

JOHN J. HEALY, Monsanto Chemical Co., St. Louis, is the new president of the American Institute of Chemical Engineers, and **John J. McKetta**, of the University of Texas, is its new vice-president. Healy, a member of Monsanto's corporate planning group, has served two terms as a director of the institute, and has represented the institute on the Engineering Manpower Commission. McKetta is chairman of the chemical engineering department at the university.

L. C. Ritts, Jr.

J. R. Evans

J. C. Johnston

JOHN R. EVANS has been elected vice-president for production and a director of Pan American Petroleum Corp., Tulsa, subsidiary of Standard Oil Co. (Ind.), and **L. CHASE RITTS, JR.**, has been named coordinator-crude oil production, purchasing, and transportation for the parent company in Chicago. **JOHN C. JOHNSTON** succeeds Ritts as vice-president and a director of Pan Am, and as manager of Pan Am's Texas-Louisiana Gulf Coast division at Houston. Evans was most recently general manager of production for Indiana Standard, in Chicago. Before that, he had been associated with Pan Am and its predecessor companies. In his new position, Evans succeeds the late **Whitney M. Elias**. Ritts has been vice-president, a director, and division manager at Houston, for the subsidiary, since 1959, and Johnston has been manager of exploration at Pan Am's general office in Tulsa for the past 15 months. He has also been division superintendent at Tulsa.

C. C. Johnson

R. C. Graham

CECIL C. JOHNSON is president of the new Tenneco Corp., and **R. C. GRAHAM** is president of the new Tenneco Oil Co., which have been formed by Tennessee Gas Transmission Co., Houston. Johnson was formerly treasurer and senior vice-president of Tennessee Gas, and Graham was president of its Tennessee Gas & Oil Co. division. The new alignment is part of a plan to separate the government-regulated gas pipeline business of Tennessee Gas from its oil operations and other nonutility business. The new companies will handle Tennessee Gas non-regulated business. The Tenneco board will include **Gardiner Symonds**, chairman and chief executive officer of Tennessee Gas; **Harold Burrow**, its president; **R. L. McVey**, its executive vice-president; Graham, and Johnson. **Harly F. Eaker**, formerly vice-president of Bay Petroleum Co., refining and marketing division of Tennessee Gas, is Tenneco's vice-president. Tenneco Oil will function as an integrated oil company, and operate the facilities of three divisions, Tennessee Gas & Oil Co., Tennessee Oil Refining Co., and Tennessee Overseas Co. Directors of Tenneco Oil are: Symonds, chairman; **R. R. Dean**, vice-chairman; Burrow, Johnston, and Graham. Dean was formerly president of the Tennessee Oil Refining Co. division. **W. E. Scott, S. C. Oliphant**, and **W. C. Hildebrand**, officers of Tennessee Gas, are senior vice-presidents of Tenneco Oil. Other Tennessee Gas officers who are vice-presidents of the new company include: **J. S. Collins, E. K. Karter, Leo L. Leabo, George Meason, K. G. Pearce, R. L. Sielaff, O. W. Ward**, and **A. R. West.**

HORACE HARRINGTON has been named manager of exploration for Libya Superior Oil Co. He will open the company's first Libyan office, in Tripoli, shortly after the first of the year. Harrington was formerly district geologist for Superior Oil Co., the Libyan company's parent, in Bakersfield, Calif. **Bill Winter**, formerly a geologist at Bakersfield, succeeds Harrington as district geologist there.

H. F. SIMMONS is the new division exploration manager of Shell Oil Co.'s Corpus Christi (Tex.) division. Simmons, who was most recently division geologist in the southwest Louisiana division of Shell's New Orleans area, succeeds **J. H. Pittinger**, who will assume a special six-month assignment. Simmons, who joined Shell in 1949 has also served as district geologist at Baton Rouge, and as geologist in the New Orleans area.

L. J. MAUROVICH has been named superintendent of the El Chaure refinery and terminal of Sinclair Venezuelan Oil Co., at Puerto la Cruz, Venezuela. He succeeds **J. J. Connelly**, who has retired. Maurovich, who joined Sinclair Venezuelan in 1944, was most recently assistant refinery superintendent at El Chaure. He is a native of Caracas.

I. E. KILLIAN moves up to the newly created position of sales manager at the New York headquarters of the Esso Standard, Eastern Region of Humble Oil & Refining Co. **Aden P. Williams, Jr.**, succeeds Killian as manager of Esso's New England marketing division, with headquarters in Boston. Killian, who joined Esso's Carolinas division in 1928, moved to New York in 1952 as manager of LPG sales, and in 1955 became operations manager in the marketing department there. He transferred to Boston as division manager in 1956. Williams has been reseller sales manager at Esso headquarters in New York since May. He is a former vice-president and director of Fenola Oil Co., a former Esso subsidiary that is now a part of Humble.

I. E. Killian

I. H. Hughes

IVOR HAYDEN HUGHES moves up to executive vice-president of Pan American International Oil Corp., New York. He was formerly general manager of its subsidiary, Pan American Argentina Oil Co., in Buenos Aires. **Edgar E. Martin**, formerly with Pauley Petroleum, Inc., Midland, Tex., succeeds Hughes as general manager in Buenos Aires. Martin was general manager in Pauley's subsidiaries in Mexico. Hughes joined Pan American International in 1958, and moved directly to Argentina. Before that, he was vice-president and assistant to the president of Sunray Mid-Continent Oil Co. He has also had assignments which included engineering and supervisory positions in Venezuela, Peru, and Colombia for several other oil companies.

RALPH WALSH has been elected president and a director of Macmillan Petroleum Corp., Los Angeles, succeeding **S. M. Batterson**, who is retiring. Walsh, who moved from New York to California in 1930 to become vice-president of Richfield Oil Co. of California, was most recently president and owner of Armstrong Engineering Co., which offered services to the West Coast oil industry. He has also been president of Walburn Petroleum Co., New York, and was executive vice-president and a director of Richfield Oil Corp., New York, before Richfield acquired Walburn Petroleum.

LLOYD HOLSAPPLE is manager of a new general staff department established by Sinclair Oil & Gas Co. in Tulsa, to handle unitization and part-interest functions. **J. H. Rankin** will be supervisor of the part-interest section of the department, and **C. M. Pickrell** will be supervisor of the unitization section. Holsapple, who joined Sinclair in 1922, has been its chief engineer since 1954. Rankin was formerly head of part interest operations for Prairie Oil & Gas Co., Tulsa, and Pickrell, who joined Sinclair in 1920, has been in its Federal Power Commission activities department since earlier this year.

GEORGE F. GETTY, II, president of Tidewater Oil Co., Los Angeles, has been elected first vice-president of the Western Oil & Gas Assn., and R. R. Von Hagen, president of Lloyd Corp., Ltd., Beverly Hills, has been elected second vice-president. At the same time, **Howard G. Vesper**, president of Standard Oil Co. of California, Western Operations, Inc., San Francisco, was reelected president of the association. **Stuart H. Durkee**, vice-president and treasurer of Superior Oil Co., Los Angeles, has been reelected treasurer, and **Felix Chappellet** has been reelected secretary, vice president and general manager.

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And A Happy New Year to You, Too

THIS WEEKEND everybody'll be wishing everybody else a bright and prosperous New Year. Without reservation, we join in that traditional toast.

The year that's coming up is going to be an exciting one—for us, as a publication, and for oil, as an industry.

Where we're concerned, our editors around the world will continue to tip you off to trends and developments, and to provide you with the most authoritative and factual reports on petroleum that you'll find anywhere.

PROBLEMS OLD AND NEW are in the cards for oil. The real excitement, though, will be the guts-and-blood battles for customers, for outlets, for marketing advantages, and for better profit ratios. Make no mistake about it, competition in 1961 is going to be about the fiercest this old industry has seen in many a year.

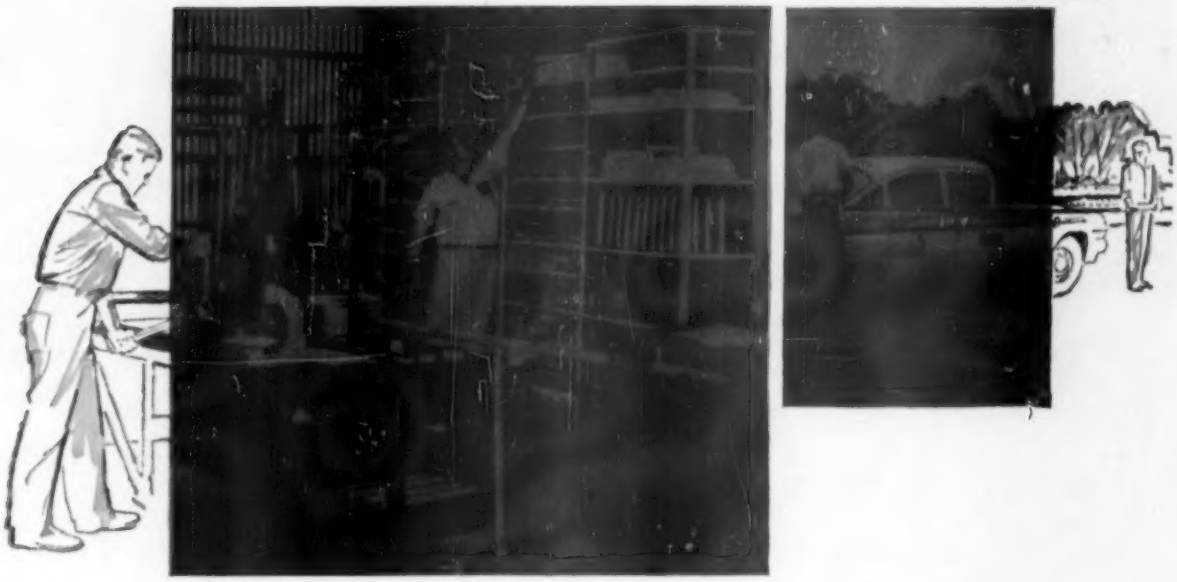
Take the "Battle of the Standards" that is now being joined. These erstwhile confederates of five decades ago are locking horns on a national scale for the first time. And the impact of this struggle can't help but jiggle the industry from top to bottom, and set off secondary waves of action and reaction. Those of you who still harbor notions that the Standards are just one big family beneath the surface—just make sure you don't get caught on the firing line. Playing with a cement mixer could be safer.

Excess gasoline stocks, which will be another springtime headache unless the industry is most, most, careful, undoubtedly will aggravate this marketing struggle—not only by and with the Standards but throughout the entire industry. And the wage increases that are adding $100-million or more to the industry's payrolls and operating costs aren't going to make it any easier. Already, warning flags are up that product prices will have to rise too.

WASHINGTON WILL BE THE HUB of much excitement—and perhaps anxiety—for oil men in 1961. James M. Landis, President-elect Kennedy's top regulatory advisor, for example, has definite ideas about a national fuels policy. This could presage a bitter struggle over end-use controls, something that is anathema to every thinking oil man.

No one's sure, either, what's in the wind for import controls, percentage depletion, gasoline taxes, wildlife preserves, and so on. It's a new Administration, you know, and anything can happen—and probably will. Yes, it'll be an exciting 12 months, and oil's watchdogs will simply have to keep their ears up and their eyes open.

But for the nonce, let's put that in our future book, and reserve this weekend to say: Best Wishes to All for a Prosperous New Year.



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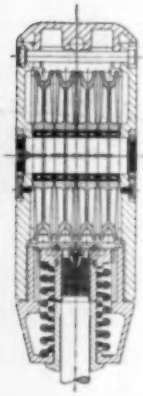
How National Supply gets more stability, cuts maintenance in Universal hook blocks

With as much as 300 tons swinging and swaying on this National Universal Hook Block, its sheaves must take terrific stress. To keep the block stable, working with minimum maintenance, National Supply Co. mounts the sheaves on Timken® double row tapered roller bearings. (Diagram below shows typical mounting of Timken TNASWE bearings). Timken bearings do the job because they . . .

1) *Roll all loads, maintain alignment.* Their tapered design enables Timken bearings to take *both* radial and thrust loads, hold sheaves in accurate alignment. And because Timken bearings roll true, they roll virtually friction-free.

2) *Last longer.* Full line contact between their rollers and races gives Timken bearings extra load-carrying capacity for heaviest cable loads. You get longer bearing life, reduced maintenance. Sheaves turn easily. Cables last longer.

You're assured of extra benefits when the machines you build or buy are Timken bearing-equipped. It's because of Timken Company leadership in tapered roller bearing design and in service from graduate engineer salesmen—all of it backed by the most modern bearing research and testing facilities in the bearing industry.



When you buy Timken bearings you get . . . 1) Quality you can take for granted. 2) Service you can't get anywhere else. 3) The best-known name in bearings. 4) The pace setter in lower bearing costs. The Timken Roller Bearing Company, Canton 6, Ohio. Cable: "TIMROSCO". ***Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.*** Canadian Division: Canadian Timken, St. Thomas, Ontario.

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